



Address [http:// espisanie.financebg.com](http://espisanie.financebg.com)



Електронно научно списание®



Ф И Н А Н С И

ISSN 2535-0684

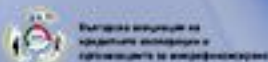
ПАРТНЬОРИ



www.saedinenie.bg



www.efinance.bg



www.baccom.eu



Съюз на икономистите
в България

www.bgeconomist.bg



www.fiicr.eu



www.bit-forum.org



Главен редактор – Проф. д-р Ганчо Ганчев

Editor-in-Chief – Prof. Gancho Ganchev

Зам. гл. редактор – Доц. д-р Елена Ставрова

Deputy ch. editor – Assoc. Prof. Elena Stavrova

Отговорен редактор - Хачик Язъджиян +359 882 933 244

Hachik Yazadzhiyan

Редколегия:

Editorial Board:

Проф. д.ик.н. Асен Конарев,
България
Проф. д.ик.н. Румен Гечев, България
Проф. д-р Адриана Григореску,
Румъния
Проф. д-р Румен Брусарски,
България
Проф. д-р Силвия Трифонова,
България
Проф. д-р Стефан Вачков, България
Проф. д-р Стефан Симеонов,
България
Доц. д-р Банчо Банов, България
Доц. д-р Владимир Ценков, България

Prof. Asen Konarev, Bulgaria
Prof. Rumen Gechev, Bulgaria
Prof. Adriana Grigorescu,
Romania
Prof. Rumen Bursarski, Bulgaria
Prof. Silviya Trifonova, Bulgaria
Prof. Stefan Vachkov, Bulgaria
Prof. Stefan Simeonov, Bulgaria
Assoc. Prof. Bancho Banov,
Bulgaria
Assoc. Prof. Vladimir Tzenkov,
Bulgaria

Доц. д-р Десислава Стоилова,
България
Доц. д-р Иван Тодоров, България

Assoc. Prof. Desislava Stoilova,
Bulgaria
Assoc. Prof. Ivan Todorov,
Bulgaria

Доц. д-р Йелена Титко, Латвия

Assoc. Prof. Yelena Titko, Latvia

Гл. ас. д-р Мария Паскалева,
България
Гл. ас. д-р Стоян Танчев, България
Гл. ас. д-р Николай Патонов,
България

Asst. Prof. Maria Paskaleva,
Bulgaria
Asst. Prof. Stoyan Tanchev,
Bulgaria
Asst. Prof. Nikolay Patonov,
Bulgaria

Маг. Венелин Йорданов, България

MEC. Venelin Yordanov

Издател:

Етик Финанс АД

Председател: д-р ик. Петър Нейчев

Зам. Председател: европейски
адвокат Димитър Гишин

Предпечат:

Fin TV – Creative Studio

“Фин ТВ“ ООД

www.fintvbg.com

office@fintvbg.com

+359 882 933 244

Publisher

Ethic Finance PLC

Chairman: Dr.Ecc Eng. Petar
Neychev

Deputy chairman: European
Lawyer Dimitar Gishin

Prepress

Fin TV – Creative Studio

Fin TV Ltd

www.fintvbg.com

office@fintvbg.com

+359 882 933 244

- **A CRITICAL REVIEW OF CLASSICAL THEORETICAL APPROACHES TO THE ROLE OF THE STATE IN ECONOMIC GROWTH / КРИТИЧЕН ПРЕГЛЕД НА КЛАСИЧЕСКИТЕ ТЕОРЕТИЧНИ ПОДХОДИ ЗА РОЛЯТА НА ДЪРЖАВАТА В ИКОНОМИЧЕСКИЯ РАСТЕЖ.....9**

Keywords: Economic Growth, Classical Economics, Role of State

Abstract. In this paper, a thorough evaluation is presented on the conventional theoretical frameworks concerning the function of the state in economic development. These established theories, such as mercantilism, classical liberalism, Marxism, and Keynesianism, have played a vital role in shaping our comprehension of the correlation between economic growth and government intervention. The individual perspectives of each theory regarding the role of the state range from promoting national interests to a more hands-off approach with minimal government intervention and laissez-faire policies. Within the review, the strengths and weaknesses of classical theories in regard to the state's role in economic growth are thoroughly examined and analyzed. The aim of this paper is to deepen our understanding of the intricate relationship between the state and economic growth by subjecting traditional theoretical approaches to critical scrutiny. This paper highlights the significance of considering the historical, social, and political circumstances that influence economic theories and policy advice.

- **CATEGORIES OF MERGERS AND ACQUISITIONS; EXPLORING THE REASONS, BENEFITS, AND RISKS OF MERGERS AND ACQUISITIONS (M&A) FOR COMPANIES / КАТЕГОРИИ СЛИВАНИЯ И ПРИДОБИВАНИЯ; ИЗСЛЕДВАНЕ НА ПРИЧИНИТЕ, ПОЛЗИТЕ И РИСКОВЕТЕ ОТ СЛИВАНЕ И ПРИДОБИВАНЕ (M&A) ЗА КОМПАНИИ.....15**

Keywords: Mergers and Acquisitions; business transactions; categories of mergers and acquisitions; benefits of M&A; risks of M&A

Abstract. Mergers and Acquisitions (M&A) are complex business transactions that involve combining two or more companies into a single entity. What categories of mergers and acquisitions are there? There are numerous methods to classify them. One method is based on the relationship between the acquiring

company and the acquired company, such as whether they share the same industries, supply chain, or customers. The method by which the acquiring corporation becomes the owner of its target is a second method. This article will discuss these categories of acquisitions and mergers. Additionally, the article will examine the potential benefits of M&A. However, it also highlights the risks associated with M&A. The article concludes by emphasizing M&A considerations and consequences, and finally, methodologies for the effective execution of Merger and Acquisition.

- **COVID-19 AND THE GLOBAL FINANCIAL CRISIS: A TALE OF TWO CRISES** / COVID-19 И СВЕТОВАНТА ФИНАНСОВА КРИЗА: РАЗКАЗ ЗА ДВЕ КРИЗИ.....31

Keywords: Global Financial Crisis, COVID-19 pandemic, Fiscal Policy

Abstract. This paper presents a brief summary of the comparative study between the COVID-19 pandemic and the Global Financial Crisis (GFC) of 2008. Despite having distinct origins, both crises have had a significant impact on global economies. The COVID-19 pandemic arose as a worldwide health crisis that necessitated strict lockdown measures and resulted in a rapid decline in economic activity. On the other hand, the GFC originated from weaknesses within the financial sector and caused a global recession characterized by bank failures and reduced economic output. Despite their differences, both crises led to an increase in unemployment rates and required significant policy interventions. Central banks implemented expansive monetary policies, while governments adopted fiscal stimulus packages to mitigate the economic consequences. It is critical to comprehend the similarities and differences between these crises to develop effective policies and build more resilient economies to combat future challenges.

- **FINANCIAL SYSTEM AND ITS ROLE FOR RECOVERY AND SUSTAINABILITY OF THE ECONOMY** / ФИНАНСОВА СИСТЕМА И НЕЙНАТА РОЛЯ ЗА ВЪЗСТАНОВЯВАНЕ И УСТОЙЧИВОСТ НА ИКОНОМИКАТА.....39

Keywords: финансова система, банки, криза, пандемия

Abstract. По време на финансовата криза банките в България налагат относително ограничение на кредитния ресурс. Висока цена на заемания капитал. Преди това и в годините на затихването на кризата. Банките стоят далеч секютиризирането на активи и с твърде незначителни позиции в рисковни ценни книжа. Така те не помагат за развитието на българският капиталов пазар, поддържат капиталовата алокация с ниска възвръщаемост и реализират символичен доход за привлечените активи.

- **NEOCLASSICAL THEORETICAL APPROACHES OF THE ROLE OF THE STATE ON ECONOMIC GROWTH / НЕОКЛАСИЧЕСКИ ТЕОРЕТИЧНИ ПОДХОДИ ЗА РОЛЯТА НА ДЪРЖАВАТА ЗА ИКОНОМИЧЕСКИЯ РАСТЕЖ.....47**

Keywords: Economic Growth, Neoclassical Economics, Role of State

Abstract. The purpose of this paper is to examine the neoclassical theories that attempt to explain how the state can promote economic growth. The neoclassical school of economics relies on the principles of market efficiency and incentives, which prioritize limited government intervention and market-based policies. As a result, three distinct perspectives arise from this theoretical approach. The perspective of the minimalist state emphasizes the importance of the state having a limited role in the economy. Instead, it concentrates on establishing a steady legal and institutional foundation that safeguards property rights and guarantees the rule of law. Furthermore, the state is required to intervene in areas where market failures may impede the provision of public goods or externalities. Lastly, the creation of a fitting institutional structure, along with the implementation of policies that support the market, is deemed essential for enabling economic growth. Despite the criticisms directed towards neoclassical approaches, they offer crucial perspectives on how the state and economic growth are intertwined, providing policymakers with useful advice on how government intervention can facilitate sustainable economic development while recognizing its limitations.

- **PUBLIC EXPENDITURE AND ECONOMIC GROWTH: THE CASE OF ADOLPH WAGNER'S LAW / ПУБЛИЧНИ РАЗХОДИ И ИКОНОМИЧЕСКИ РАСТЕЖ: СЛУЧАЙЪТ СЪС ЗАКОНА НА АДОЛФ ВАГНЕР.....53**

Keywords: Economic Growth, Wagner's Law, Public Expenditure

Abstract. The focus of this paper is to investigate the connection between public expenditure and economic growth, with a particular emphasis on Adolph Wagner's law. According to the law, there is a positive correlation between the level of economic development and the size and growth of public expenditure in an economy. This study critically examines the applicability and implications of Wagner's Law in various economic contexts by analyzing empirical studies and theoretical perspectives. It also explores the factors that have the potential to impact the observed relationship, such as population growth, industrialization, urbanization, technological advancements, and social welfare policies. By acknowledging the intricacies and subtleties of this relationship, this study provides insights for policymakers who are looking to maintain a balance between public investment and fiscal sustainability while contributing to the ongoing debate surrounding the impact of public expenditure on economic growth.

- **TAX HARMONIZATION POLICY AND MACROECONOMIC CHALLENGES IN A CHANGING EUROPEAN UNION / ПОЛИТИКА ЗА ДАНЪЧНА ХАРМОНИЗАЦИЯ И МАКРОИКОНОМИЧЕСКИ ПРЕДИЗВИКАТЕЛСТВА В ПРОМЕНЯЩИЯ СЕ ЕВРОПЕЙСКИ СЪЮЗ.....59**

Keywords: Tax Harmonization, EU Fiscal Policy, Macroeconomic Factors

Abstract. With the European Union (EU) poised to confront major macroeconomic challenges, tax harmonization policy has emerged as a pressing matter. Our objective is to comprehend the prospective advantages and hindrances of harmonizing taxes amongst member states, considering the varied economic circumstances and fiscal agendas within the EU. Our analysis showcases that, while tax harmonization can foster fairness, impede tax base erosion, and refine economic integration, it also confronts sizable macroeconomic obstacles. The obstacles to achieving effective tax harmonization in the European Union are numerous and complex. One such challenge is finding a way to balance fiscal autonomy with harmonization efforts. Another is addressing economic inequalities between member states, while simultaneously mitigating the risk of tax competition. This research serves to enhance our comprehension of tax harmonization policy in the EU and underscores the importance of taking macroeconomic factors into account when crafting effective harmonization strategies.

- **THE FINANCIAL IMPACT OF CYBER RISK: EMPIRICAL EVIDENCE FROM GREECE AND THE EUROPEAN ECONOMIC ZONE / ФИНАНСОВОТО ВЪЗДЕЙСТВИЕ НА КИБЕР РИСКА: ЕМПИРИЧНИ ДОКАЗАТЕЛСТВА ОТ ГЪРЦИЯ И ЕВРОПЕЙСКАТА ИКОНОМИЧЕСКА ЗОНА.....67**

Keywords: Cyber risk, cyber events, incident rate, financial costs, systemic risk, bivariate analysis, logarithmic regression, data breach, Europe, Greece

Abstract. As technology continues to advance and societies become increasingly interconnected, the risk of cyber threats and attacks has become a significant concern for individuals, organizations, and governments worldwide. Now more than ever, cyber threats continue to increase in frequency and sophistication with data breaches and privacy violations being the main event types used by cyber attackers. As a result, understanding the economic implications of cyber risk becomes more and more crucial in terms of effective risk management across all organizations regardless of country of business activity. Despite limited sources of data, this paper aims to investigate the impact magnitude of cyber risk in the context of two widespread notions related to cyber security; a) the average costs per incident and b) the systemic risk. Specifically, we examine a sample of 171 cyber incidents across 7 industries both from private and public sector that encompass all 4 main types of cyber events, namely phishing, data breach, malware and privacy violations. On an industrial level, our dataset allowed us to develop a predictive model that explains the impact magnitude of cyber risk not only on financial costs but also on the systemic industrial risk by employing classical bivariate analysis tools on the one hand and replications of recently developed logarithmic regression models on the

other. Additionally, this paper attempts to answer a critical question namely how much of a corporate problem are cyber-attacks.

Our findings suggest that despite low incident rates observed, the retail sector suffers the higher average costs among all business fields. Furthermore, we were also able to verify that there's a positive and statistically significant correlation between average costs and incident rates, however, the same is not true when testing the relationship behavior between systemic risk and incident rates. Last but not least our empirical results suggest that a 10% increase in the industrial incident rate is associated with a 0.005% increase in average costs.

- **FINANCIAL SYSTEM AND ITS ROLE FOR RECOVERY AND SUSTAINABILITY OF THE ECONOMY / ФИНАНСОВА СИСТЕМА И НЕЙНАТА РОЛЯ ЗА ВЪЗСТАНОВЯВАНЕ И УСТОЙЧИВОСТ НА ИКОНОМИКАТА.....84**

Keywords: financial system, banks, crisis, pandemic

Abstract. During the financial crisis, the banks in Bulgaria imposed a relative restriction on the credit resource. High cost of borrowed capital. Before that and in the years when the crisis subsided. Banks stay away from securitization of assets and with too insignificant positions in risky securities. Thus, they do not help the development of the Bulgarian capital market, maintain the capital allocation with a low return and realize a symbolic income for the attracted assets.

- **REVIEW OF THE TWIN DEFICITS HYPOTHESIS IN A GLOBAL CONTEXT / ПРЕГЛЕД НА ХИПОТЕЗАТА ЗА ДВОЙНИЯ ДЕФИЦИТ В ГЛОБАЛЕН КОНТЕКСТ.....87**

Keywords: current account balance, government budget balance, twin deficit hypothesis

Abstract. In this study analyzes the relation between budget deficit and current account deficit in a global context. The essence of the Twin Deficit Hypothesis and the interpretations of the subject from the entire economic academy are examined, being compared with research on the subject by other authors.

- **PLASMA TREATMENT OF MUNICIPAL SOLID WASTE - INNOVATIVE, CLEAN AND COST-EFFECTIVE / ПЛАЗМЕНО ТРЕТИРАНЕ НА ТВЪРДИТЕ БИТОВИ ОТПАДЪЦИ – ИНОВАТИВНО, ЧИСТО И РЕНТАБИЛНО.....99**

Keywords: твърди битови отпадъци; плазмена обработка на твърди битови отпадъци; инсиниратор; управление на отпадъците

Abstract. Настоящата статия представя плазмената технология за третиране на твърди битови отпадъци, като иновативно, чисто и икономически ефективно

решение. Технологията не е панацея за проблема с отпадъците, има своите предимства по отношение на конвенционалните подходи, както и своите недостатъци. Тя дава възможност за по-компактно обработване, което извлича значително по-голямо количество полезен ресурс от масата на отпадъците, не произвежда вторични продукти, които се нуждаят от обработка или депониране. Всичко това се случва чрез инсталация без комин при високи норми на икономическа ефективност.

CRITICAL REVIEW OF CLASSICAL THEORETICAL APPROACHES TO THE ROLE OF THE STATE IN ECONOMIC GROWTH

1 GALANIS IOANNIS¹

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

In this paper, a thorough evaluation is presented on the conventional theoretical frameworks concerning the function of the state in economic development. These established theories, such as mercantilism, classical liberalism, Marxism, and Keynesianism, have played a vital role in shaping our comprehension of the correlation between economic growth and government intervention. The individual perspectives of each theory regarding the role of the state range from promoting national interests to a more hands-off approach with minimal government intervention and laissez-faire policies. Within the review, the strengths and weaknesses of classical theories in regard to the state's role in economic growth are thoroughly examined and analyzed. The aim of this paper is to deepen our understanding of the intricate relationship between the state and economic growth by subjecting traditional theoretical approaches to critical scrutiny. This paper highlights the significance of considering the historical, social, and political circumstances that influence economic theories and policy advice.

Keywords: *Economic Growth, Classical Economics, Role of State*

JEL Codes: *B12, B22, B50*

Introduction

The concept of economic development has been commonly used to describe the economic and social well-being of a nation since the early 20th century. Prior to this, terms such as modernization, westernization, and industrialization were utilized to express similar societal advancements. The idea of economic development is often associated with the dominance of capitalism in both economic and political realms. The study of Political Economy originated with the realization of the market's importance. Classical economists believed that the market was an autonomous social institution that facilitated economic freedom and efficient distribution and utilization of production resources. As a result, determining the respective roles of the state and the market remains a central issue in the field of Political Economy.

Adam Smith, David Ricardo, John Stuart Mill, and Karl Marx are just a few of the prominent classical economists. Each one had their own unique perspective on

¹ PhD candidate at Faculty of Economics, SWU "Neofit Rilski", Blagoevgrad.

national economic prosperity and development, shaped by the era in which they lived. They all offered their own insights into the factors and socio-economic correlations that influence the evolution of the development process, as well as the limits of development within the capitalist system. Additionally, they provided commentary on the evolution of capitalism itself. The state's role in an economy can be understood through various principles (Screpanti & Zamagni, 1993).

One of the primary objectives is to intervene in the functioning of the market mechanism to ensure maximum efficiency. Such interventions primarily involve legislative and institutional actions that aim to secure conditions that promote "perfect" competition while also supervising, controlling, and limiting monopolistic situations. Additionally, the state may intervene in cases where collective goods require immediate production or business initiatives. However, the extent of the state's role in the economy is limited by the efficiency of the market economy system and the expressed political choices of the individuals who form the social group.

The second tier of concern pertains to the state's involvement in ensuring a more equitable dispersal of resources. The mechanisms of revenue and expenditure are employed in order to facilitate the redistribution of wealth.

The state's third level of intervention pertains to the stabilization of the economy. This involves a deliberate effort to use the government budget's revenue and expenditure arms to counteract any undesirable fluctuations in economic activity. The state's economic function is closely intertwined with the market's imperfect functionality (Stiglitz, 1989).

The Classics for the State

Adam Smith (1776)² was a prominent supporter of economic policies that promoted free markets. As a result, the role of the state in the economy is no longer unrestricted and ambiguous. Instead, it is being actively defined and limited to a specific framework of action. This framework is not necessarily narrow, and, in fact, Smith's work proposes a wide range of possibilities for the economic role of the state to be exercised. Smith advocates for the existence and advancement of free trade, as it enables the expansion of economic transactions and the elevation of economic forces, both domestically and internationally. Smith acknowledges the role of the government in achieving this, emphasizing the need for public activity in areas such as education, health, public works, and the regulation of the monetary system and circulation. Additionally, Smith recognizes the need for import and export taxes to generate revenue for the government and promote economic growth. The tenets of free market economics suggest that governmental interference in private investment should be avoided. The fundamental philosophy of free markets posits that the economy, and ultimately society as a whole, will benefit from a hands-off approach by the state. This principle is embodied by laissez-faire economics, which can be viewed as a key aspect of critical free-market capitalism. Nevertheless, he acknowledged that there was a possible role of government to provide market the required support. Specifically noted that individuals are unable to provide public infrastructure and their provision is responsibility of the State. Smith creates the

²Adam Smith (1937), «The Wealth of Nations», New York Modern Library- (1776)

concept of gross domestic product (GDP). Be that as it may, Smith specifically identified the types and levels of state intervention, which are national defense, justice, and developmental public works necessary for social welfare (Reisman, 1996).

David Ricardo, a prominent economist belonging to the classical school of thought, made noteworthy advancements in comprehending the state's function in economic expansion. Ricardo's investigation centered on how government policies, trade, and economic development interact with one another. The objective of this section is to explore Ricardo's stance on how the state can encourage economic growth and the potential outcomes of such measures. In 1817, Ricardo wrote his most well-known work **“On the Principles of Political Economy and Taxation”**. The most prominent idea was the comparative advantage which argued the idea of free, international trade, exempted from protectionist policies. The theory of comparative advantage and the resulting profits from international trade have been presented and studied in detail in modern literature (Deraniyagala, 2004; Sen, 2010; Krugman, 2011; Shaikh, 2004)

Ricardo's assessment of government intervention: Ricardo was an advocate for unrestricted trade, but he did have some misgivings about the government's involvement in economic affairs. In his view, actions such as the implementation of protectionist policies could distort the concept of comparative advantage and impede progress in the economy. Ricardo maintained that the government's responsibility should largely be to preserve property rights, ensure compliance with contracts, and facilitate the creation of public goods and infrastructure that are crucial for economic functioning. Acknowledging the state's responsibility in upholding property rights and ensuring public goods, Ricardo was a proponent of limited government intervention in the economy, allowing market forces to dictate growth.

Ricardo's observations on the function of the state in advancing economic growth have lasting relevance in present-day discussions. His focus on unrestricted commerce and minimal government involvement has greatly impacted the formulation of economic policies and the advocacy for globalization. Nevertheless, contemporary dialogues accept the necessity of state intervention in remedying market imperfections and attaining fair distribution of benefits. Ricardo's scrutiny affords invaluable perceptions into the intricate interplay of the state and economic growth, resulting in continued investigation and improvement of economic policies towards the attainment of sustainable development.

John Stuart Mill was an eminent philosopher and economist during the 19th century, and his works greatly influenced the comprehension of the state's function in economic development. Mill's study centered around the encouragement of individual autonomy, societal well-being, and the significance of state interference in rectifying market deficiencies. One of the responsibilities of the State is to rectify market failures. Mill acknowledged the potential for market failures to impede economic progress while advocating for unrestricted markets. He posited that rectifying these failures was a critical function of the state. Mill identified several imperfections within the market, including externalities, monopolies, and information

asymmetry, which necessitated the intervention of the government to guarantee the efficient allocation of resources and to foster economic development. According to Mill, the government should step in and tackle problems concerning the well-being of society, such as income distribution and social welfare. He held the view that a fair society ought to mitigate poverty, secure a safety net for the disadvantaged, and establish equal opportunities for education and healthcare. Mill's utilitarian philosophy served as the foundation for his belief that government intervention could result in better overall welfare for society and foster economic development by lessening social inequalities. Mill's analysis encompasses multiple facets, including the state's responsibility in safeguarding individual rights (Mill, 1998). In his argument, Mill posits that the state should prioritize the protection of property rights, enforce contracts, and prevent coercion and fraud. By establishing a legal framework that prioritizes the safeguarding of individual rights, the state contributes to the growth of the economy by providing a stable and secure environment for business activities and investments. Even in present-day discussions regarding economic policy and the state's responsibility in promoting sustainable and comprehensive economic growth, the relevance of his emphasis on individual liberty, rights protection, and fair access to resources cannot be denied (Harris, 1956).

Marx Critique on the State

Marx provided a critical analysis of capitalism. At the core of Marx's analysis lies his criticism of the capitalist system. Marx posited that capitalism is essentially exploitative, with the bourgeoisie (those who own the means of production) extracting excess value from the proletariat (workers) through labor done for wages. Marx additionally argued that the state acts in the interest of the ruling class, safeguarding their ownership of assets and ensuring circumstances that facilitate capitalist exploitation. The utilization of the state as a tool for enforcing capitalist class dominance is the central theme of this statement. Marx perceived the state as a tool utilized by the dominants to exert authority over the economy and society. According to Marx, the state reinforces the legal and political structures that maintain the capitalist mode of production. It safeguards private ownership, prioritizes the interests of the bourgeoisie, and represses any challenges to the capitalist system. Consequently, the state operates as an instrument of class subjugation (Marx & Engels, 1967).

Marx posits that the state's primary function in capitalist societies is to maintain the necessary conditions for capital accumulation, rather than directly promoting economic growth. Although the state may undertake certain measures to facilitate economic development, such as investments in infrastructure, these actions are primarily driven by the need to ensure the smooth functioning of the capitalist mode of production. This perspective highlights the state's role as an instrument of capitalist class rule, maintaining the conditions for capital accumulation rather than directly promoting economic growth. Despite Marx's analysis focusing on the exploitative nature of capitalism, his vision of a future socialist society presents an alternative in which the state is actively involved in promoting economic development for the benefit of all. Even today, Marx's ideas remain relevant in debates regarding the

state's role in economic development and serve as a basis for exploring socioeconomic structures that go beyond capitalism.

Conclusion and Recommendations

Upon reviewing the classical theoretical approaches to the role of the state in economic growth, it becomes apparent that there is a multitude of perspectives and the state's relationship with economic development is a highly intricate one. As a counterpoint to mercantilism, classical liberalism emerged with its concentration on individual liberty, unimpeded markets, and restricted government intervention. Its proponents highlighted the influence of market dynamics in propelling economic advancement, and stressed the critical nature of property rights and the rule of law. Though classical liberalism has played a major role in shaping economic policies and advancing globalization, its advocacy of laissez-faire has been moderated by the acknowledgment of the necessity of state intervention to remedy market inefficiencies and promote communal welfare. Capitalism was subjected to intense scrutiny by Marxism, which exposed its exploitative nature and the state's duty to safeguard the interests of the capitalist class. According to Marxist principles, the state functions as an apparatus of class domination, perpetuating inequality and obstructing legitimate economic progress. Marxism's criticism of capitalism continues to be relevant, but its proposed solution, a socialist society with significant state intervention, has encountered practical issues and has been the subject of ongoing debates and revisions. In reviewing these traditional theoretical approaches, it becomes clear that it is crucial to weigh both their benefits and drawbacks. The state's role in promoting economic growth is intricate and varies depending on the situation. Consequently, tailored policies are necessary to account for differing contexts and historical circumstances, striking a balance between market forces, individual autonomy, social welfare, and governmental intervention.

In present times, economic thought has come to recognize the significance of the state in managing market failures, fostering communal well-being, guaranteeing fair allotment of resources, and setting up conditions favorable to the progress of the economy. The ongoing discussions regarding the state's role in the economic growth process have a lasting impact on economic theories and policies, serving as a mirror to the changing comprehension of the intricate workings of economic systems and the necessity of flexible and situation-specific tactics.

REFERENCES

- Screpanti, E., & Zamagni, S. (1993). *An Outline of the History of Economic Thought*. Oxford: Clarendon.
- Smith A. (1937). «The Wealth of Nations», New York Modern Library 1937.
- Stiglitz, J. E. (1989). *The economic role of the state*. Wiley-Blackwell.
- Marx, K., & Engels, F. (1967). *The communist manifesto*. 1848. Trans. Samuel Moore. London: Penguin, 15(10.1215), 9780822392583-049.

- Mill, J. S. (1998). *On liberty and other essays*. Oxford University Press, USA.
- Reisman, G. *Capitalism*; Jameson Books: Ottawa, ON, Canada, 1996
- Ricardo, D. (1817). *On the principles of political economy*. London: J. Murray.
- Deraniyagala, S., (2004). Neoliberalism in International Trade: Sound Economics or a Question of Faith? in *Neo-Liberalism: A Critical Reader*, Saad-Filho A., (ed.), London: Pluto Press.
- Krugman, P., (2011). *The New Economic Geography, Now Middle-Aged.*, Prepared for presentation to the Association of American Geographers.
- Sen, S., (2010). *International Trade Theory and Policy: A Review of the Literature*. Working Paper, No 635. The Jerome Levy Economics Institute of Bard College.
- Shaikh, A., (2004). *The Economic Mythology of Neoliberalism.*, in *Neo-Liberalism: A Critical Reader*, Saad-Filho A. (ed.), London: Pluto Press.
- Harris, A. L. (1956). John Stuart Mill's theory of progress. *Ethics*, 66(3), 157-175.

CATEGORIES OF MERGERS AND ACQUISITIONS; EXPLORING THE REASONS, BENEFITS, AND RISKS OF MERGERS AND ACQUISITIONS (M&A) FOR COMPANIES

2 ANTONIADOU IOANNA³

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

Mergers and Acquisitions (M&A) are complex business transactions that involve combining two or more companies into a single entity. What categories of mergers and acquisitions are there? There are numerous methods to classify them. One method is based on the relationship between the acquiring company and the acquired company, such as whether they share the same industries, supply chain, or customers. The method by which the acquiring corporation becomes the owner of its target is a second method. This article will discuss these categories of acquisitions and mergers. Additionally, the article will examine the potential benefits of M&A. However, it also highlights the risks associated with M&A. The article concludes by emphasizing M&A considerations and consequences, and finally, methodologies for the effective execution of Merger and Acquisition.

Keywords: *Mergers and Acquisitions; business transactions; categories of mergers and acquisitions; benefits of M&A; risks of M&A*

JEL Codes: *G00, G19, G34*

Introduction

Mergers and acquisitions (M&A) are complex business transactions involving the consolidation of two or more enterprises into one. These transactions can take a variety of forms, from the purchase of a lesser company by a larger company to the merger of two equal-sized companies. In business mergers and acquisitions, the guiding principle is that two businesses together are more efficient and profitable than two separately. By merging resources, expertise, and customer bases, the newly established business is expected to gain a competitive advantage over its rivals.

The different types of mergers and acquisitions

Acquisitions predicated on the buyer and seller's relationship

³ PhD candidate at Faculty of Economics, SWU “Neofit Rilski”, Blagoevgrad.

According to the relationship between the buyer and seller, there are four primary categories of acquisitions: horizontal, vertical, conglomerate, and congeneric (www.wolterskluwer.com, n.d.). In general, regardless of the type, a company will acquire another because its decision makers believe it will enhance the bottom line, whether by increasing sales or decreasing expenses. However, each of these distinct categories of acquisitions achieves this objective in a distinct manner.

Horizontal acquisition

Horizontal acquisition occurs when a company acquires a competitor in the same industry. As an example, ABC Inc., a manufacturer of widgets, purchases XYZ Corp., another manufacturer of widgets (www.wolterskluwer.com, n.d.).

Several horizontal acquisitions incorporate competitors. In the case of ABC Inc. and XYZ Corp., for instance, both companies sold to the same consumer base. Nonetheless, a horizontal acquisition need not involve competitors. The above would be possible if ABC Inc. only sold products on the East Coast and XYZ Corp. only on the West Coast.

The chance to increase a company's customer base and market share, as well as the ability to expand into new markets, are among the benefits of horizontal acquisitions (www.wolterskluwer.com, n.d.).

Vertical acquisition

When one company acquires another that occupies a distinct position along the supply chain, this is a vertical acquisition (www.wolterskluwer.com, n.d.). The purchaser may be more senior in the supply chain. For instance, ABC Inc. (widget manufacturer) purchases a company that manufactures a crucial component used in the production of its widgets. Or the purchaser may be a lower-tier participant. For instance, ABC Inc. acquires the company whose retail locations sell its products. Vertical acquisitions can generate new revenue streams, reduce production costs, and streamline business operations (www.wolterskluwer.com, n.d.).

Conglomerate acquisition

A conglomerate acquisition is the merger of companies engaged in economically unrelated business activities. Conglomerate acquisitions can range from short-term collaborative ventures to full mergers. The companies may be from distinct industries or geographical regions. The purchase of a soft drink company by a shoe company is an illustration of a conglomerate acquisition.

A conglomerate acquisition affords the chance to reduce capital expenditures and operating expenses while attaining other efficiencies. Due to the fact that the two companies in question operate in separate markets, there is no direct effect on competitiveness. This form of acquisition decreases the likelihood of future competition. The principal motives for conglomerate acquisitions are:

- ✓ Establishing new markets
- ✓ Reducing ad hoc dangers
- ✓ Eliminating duplicative actions
- ✓ Establishing synergies

The combination of asset sharing, cross-selling, and diversification reduces risk exposure. Existing large corporations achieve dominance by leveraging distinct competitive advantages. Nonetheless, the company's success might drop if it is unable to effectively merge two distinct businesses. Companies that pursue conglomerate acquisitions must be capable of managing a wide range of activities. They must increase production and expand their marketable area in order to increase their profitability. A small business could improve its position of strength by utilizing the retained profits of a large business (Divestopedia.com, n.d.).

The obvious benefit of merging two conglomerates is the exponential expansion of reach and the distribution of risk across more factors. The beneficial economic contributions of a conglomerate acquisition include revitalizing sluggish and inefficient firms and producing more objective resource allocation choices. The aforementioned may however, have a negative psychological impact on competition (Divestopedia.com, n.d.).

Congeneric acquisition

When one company acquires another that provides distinct products or services but serves the same customer base, a congeneric acquisition occurs (Skowronski, 2022). Therefore, the purchase of a smart television manufacturer by a streaming network would be regarded a congeneric acquisition. Practical instances include:

- In 2005, consumer goods colossus Procter & Gamble Co. acquired razor-and-battery manufacturer Gillette for \$57 billion;
- In 2007, Coca-cola acquired Glaceau, the manufacturer of Vitaminwater, for \$4.1 billion (Skowronski, 2022).

Method of purchase-based acquisitions: statutory transactions

There are numerous methods for acquiring something. Statutory acquisitions include mergers, consolidations, and the exchange of shares or interests (www.wolterskluwer.com, n.d.).

A benefit of using a statutory transaction is that the filing documents are relatively straightforward and their contents are specified by statute. Complex contractual documents facilitate transactions that are not mandated by law. Another advantage of statutory transactions over contractual transactions is that disapproving shareholders of the surviving company are required to relinquish their ownership interests. Consequently, the acquirer is not left with any dissatisfied minority shareholders. With non-statutory methods, the outcomes of a merger, consolidation, or exchange of shares or interests are predetermined and therefore certain (www.wolterskluwer.com, n.d.).

Merger

A merger is an arrangement among two existing companies to create a new entity. There are various categories of mergers, as well as a variety of motives for companies to merge. Mergers and acquisitions (M&A) are frequently used to broaden a company's reach, enter new markets, or increase market share. All of these measures are taken to enhance shareholder value. Typically, during a merger, companies have

a no-shop clause to prevent additional companies from acquiring or merging (Hargrave, 2019).

Triangular merger

In a triangular merger, the purchaser establishes a wholly-owned subsidiary that integrates with the selling entity. The entity being sold then liquidates (Bragg, n.d.). The acquirer is the sole shareholder remaining in the subsidiary. Depending on the structure of the transaction, a triangular merger can make it easier to acquire shareholder approval for an acquisition. The transaction possesses the same characteristics as a Type "A" acquisition, namely:

- At least fifty percent of the payment must be in the acquirer's stock.
- The entity being sold is liquidated.
- The purchaser acquires all of the seller's assets and liabilities.
- It must comply with the genuine purpose rule
- It must comply with the norm on business continuity.
- It must adhere to the rule of continuity of interest
- It must be authorized by both entities' boards of directors.

The two types of triangular mergers are forward and reverse. In a forward triangular merger, the affiliate survives, while the target is eliminated. In an inverted triangular merger, the intended buyer remains while the subsidiary is eliminated. Due to the fact that the target survives the merger, both the purchasing and acquired businesses continue to exist. Therefore, the reverse triangular merger is useful in situations where the loss of identity of a constituent would be problematic, such as when the target was organized under a statute that makes organization difficult or when it holds rights, permits, or treaties that do not allow assignment (www.wolterskluwer.com, n.d.).

Consolidation

A consolidation is a statutory transaction whereby two or more business entities merge to create a new business entity. All business entities that existed prior to the consolidation cease to exist. All of the disappearing entities' assets, enterprises, and liabilities are transferred to the new entity (www.wolterskluwer.com, n.d.). Statutes governing business entities in not every state permit consolidations. Consequently, the initial step in implementing a consolidation is to determine whether statutory authorization exists. If permitted, consolidations are executed similarly to mergers. Papers of consolidation must be lodged and a plan of consolidation must be created and accepted by the vanishing entities for the consolidation to take place.

Share exchange and interest exchange

In some (but not all) state business entity laws, an exchange is another statutory method of acquisition (www.wolterskluwer.com, n.d.). In a share exchange, one company acquires all of the outstanding shares of one or more classes of another company. It is a transaction that binds all shareholders of the acquired class of shares.

A transaction involving the exchange of ownership interests in a non-incorporated entity is an interest exchange. To complete the transaction, a plan of exchange must be drafted and approved, and articles of exchange must be lodged.

An exchange achieves the same result as the reverse triangular merger and can be used in its place. The acquired entity does not cease to exist in an exchange, similar to a reverse triangular merger. It becomes the acquirer's subsidiary. Unlike the triangular merger, the statutory exchange does not require the formation of a subsidiary to complete the transaction.

An exchange may also achieve the same objectives as a non-statutory, direct acquisition of shares or ownership interests. The benefit of the statutory exchange is that, in most cases, the acquirer need only secure a majority vote for approval, with the exchange becoming binding on all holders of the acquired class of ownership interests. In a contractual acquisition, in order for the acquired entity to become a wholly-owned subsidiary, the acquirer must convince all of the owners to surrender their interests.

Non-statutory transactions

Non-statutory acquisition techniques include the purchase of assets and shares or ownership interests. Because their effects are not statutorily prescribed, non-statutory methods can offer greater flexibility (www.wolterskluwer.com, n.d.). In addition, unless all constituents are of the same entity type and from the same domestic state, statutory transactions must be conducted in accordance with at least two statutes, which, in many instances, will be inconsistent, thereby adding a level of complexity.

Moreover, non-statutory acquisitions are permissible despite of the buyer's and seller's states or entity types. Consolidation and interest exchanges are not permitted under all business entity statutes, and while mergers are permitted under all business entity statutes, there may be restrictions when certain unincorporated entity categories are involved.

Share acquisition and interest acquisition

A share acquisition occurs when one company acquires all or a controlling interest in a corporation's stock by purchasing the shares directly from the shareholders. Following an acquisition of shares, the acquired company becomes a subsidiary of the acquirer. The purchase price may be paid in cash, purchaser stock, or other assets (www.wolterskluwer.com, n.d.). When an acquirer purchases the ownership interests of a limited liability company (LLC) or another form of unincorporated business entity, the transaction is commonly known as an interest acquisition.

Statutory requirements (such as holding a shareholders' meeting) are not necessary for a share or interest acquisition, which is advantageous. The acquirer merely enters into a contract with the target's owners to purchase their stakes. A disadvantage of acquiring shares or interests is that the purchaser may be required to negotiate with a large number of sellers. This could be time-consuming and costly.

In contrast to statutory transactions, the proprietors of the target who refuse to sell are not legally eliminated. Therefore, they will continue to exist and have the right to vote, inspect records, and exercise other rights.

Asset acquisition

When a startup purchases a company for its assets as opposed to its equity or shares, this is known as an asset acquisition. Shareholders are entitled to a portion of the company's residual earnings in the event that the new proprietor dissolves or sells the business in the future (www.contractsounsel.com, n.d.). To prevent prospective losses, it is essential to be specific about the assets and liabilities.

Examples of asset acquisition benefits include:

- greater flexibility over accounting policies
- acquisitions save time and money
- higher net income since acquisitions are expensed
- reduction of future "goodwill" accounting costs
- workforce cost acquisition is realized as opposed to allocated

As a general rule under common law, the purchaser does not assume the seller's liabilities, which is a major advantage of an asset purchase. It is a complex method of acquisition, which is the primary drawback. Numerous issues must be addressed, including:

- inventorying the assets;
- determining how to allocate the purchase price among the assets sold;
- determining whether new licenses or permits will be required to operate transferred businesses;
- determining who will be responsible for repairing assets and completing works in progress; and
- determining whether the buyer will be bound by the seller's labour, franchise, and other agreements.

Hybrid two-step acquisition

A hybrid acquisition strategy that combines a tender offer with a merger. In the initial phase, the buyer initiates a tender offer to acquire at least a majority of the outstanding shares of the target company. The acquirer completes a back-end merger to acquire the remaining shares of the target company in the second step (content.next.westlaw.com, n.d.).

Benefits of mergers and acquisitions

There are numerous benefits to expanding a business through mergers and acquisitions (Migrator, 2004).

- Obtaining qualified personnel or additional skills, industry or sector expertise, and other business intelligence. For example, a business with effective management and process systems will be beneficial to a client who wishes to enhance their own operations. Ideally, the business selected will have systems that complement the other and are adaptable to the management of a larger enterprise.
- Gaining access to precious assets or funds for new development. Purchasing superior production or distribution facilities is frequently less expensive than constructing them. Look for prospective clients that are marginally profitable and have significant excess capacity.
- The organization is underperforming. For instance, if an organization struggles with regional or national expansion, it may be more cost-effective to acquire an existing business than to grow internally.
- Gaining access to a larger customer pool and expanding your market share. The target company may have distribution channels and systems that the other can leverage for its own products and services.
- Diversification of the company's products, services, and long-term prospects. A target company may be able to provide with products or services that the other can distribute through its own channels.
- Reducing costs and administrative expenses via shared marketing budgets, increased purchasing power, and lower prices.
- Diminishing competitiveness. Purchasing new intellectual property, goods, or services may be less expensive than creating them oneself.
- Organic growth, i.e. the current business plan for expansion, must be accelerated. (Migrator, 2004). Businesses in the same industry or location can consolidate resources to reduce costs, eliminate redundant facilities or departments, and increase revenue.

Mergers and Acquisitions: Threats to Transactions

Merger and acquisition (M&A) transactions have persisted despite sluggish global growth. In the two years following the record-setting year of 2017, an average of more than \$3.6 trillion in M&A transactions have been announced annually (www.aon.com, n.d.).

Everything is at risk in a competitive M&A market where purchasers seek to maximize their investments, from revenue to reputation. Risks posed by cybercrime, an ever-changing regulatory environment, and the possibility of a mega-deal turning into a mega-lawsuit must be evaluated and mitigated more than ever before. Increasingly, it is essential for all parties involved to examine transactions with prudence in order to safeguard against losses and create value (www.aon.com, n.d.).

To address growing complexity, new strategies can mitigate both traditional and emerging M&A risks (www.aon.com, n.d.).

Cyber Risk

Cyber risk is one of the more recent M&A dangers. In a recent survey, 53% of business executives reported that a critical cybersecurity issue had placed an M&A deal at risk. In addition, 65% of those surveyed reported experiencing buyer's remorse due to cyber security concerns after concluding a transaction (www.aon.com, n.d.).

Jason Hogg, Chief Executive Officer of Aon's Cyber Solutions Group, states (www.aon.com, n.d.) that "in the past, cyber assessment during due diligence was often superficial and delayed until after the transaction was closed." According to Hogg, businesses now approach cyber security risk in two ways. First, companies use new big-data tools to conduct a forensic analysis of the cyber risk associated with a transaction. Second, they rely on insurance policies to protect against problems that may arise during a transaction (www.aon.com, n.d.).

A company with a strong cyber security strategy compromises its business and reputation if it acquires a business with a lower level of security. "People are less likely to remember the smaller company that was acquired," says Hogg. Everyone will instead target the parent company with the stronger brand and deeper resources (www.aon.com, n.d.).

Intellectual Property Risk

From 1985 to 2015, the number of new U.S. patents increased by 300 percent, to nearly 300,000. Today, intangible assets account for roughly 85 percent of the S&P 500's value. Given this dynamic, it is essential to grasp the value of a company's intellectual property (IP) when valuing an acquisition. However, it can be difficult to quantify the value of a company's trademarks, copyrights, patents, and trade secrets. Consequently, IP valuation is a developing risk in any transaction (www.aon.com, n.d.).

According to Lewis Lee, chief executive officer of Aon Intellectual Property Solutions, one of the greatest errors a company can make is viewing intellectual property as a legal instrument that resides in the legal department as opposed to a fundamental asset of the business. "Grant these types of assets extreme attention," he advises. "Recognize that intellectual property is a strategic component of your value proposition — valuations hinge on it " (www.aon.com, n.d.)

Nonetheless, this value can make a company a target. According to Elliot Konopko, senior managing director and co-head of Aon Litigation Risk Group (www.aon.com, n.d.), when an acquisition is announced, plaintiffs frequently initiate IP lawsuits because they believe they have leverage.

Litigation Risk

When a business is exposed to the risk of significant loss from pending or prospective litigation, it can be difficult to predict and quantify the potentially catastrophic damages. Faced with the possibility of litigation, sellers may have difficulty attracting buyers who are unwilling to incur an indefinite risk of loss. Clearly, this dynamic prevents many transactions from occurring, says Konopko. "Many buyers are unwilling to assume such a potentially catastrophic risk, and sellers are seeking a clean exit." Consequently, he states, "In the past two years, we've

identified a substantial market for what we call judgments-only catastrophic insurance." This protection limits exposure in the event of pending or threatened litigation (www.aon.com, n.d.).

Tax Risk

Additionally, the insurance market has evolved to address more recognized or heightened M&A risks, particularly tax. While RWI protects against the unpredictable, tax insurance can mitigate the risk associated with an uncertain tax position. A lawyer or accountant may give a tax opinion with a 70 to 80 percent chance that the relevant taxing authority will concur with a company's position, meaning there is a 20 to 30 percent chance it won't. These types of tax issues, if material, can present "a small but deep hole if you fall into it," says Heinz. "This is the type of risk that tax insurance is designed to mitigate" (www.aon.com, n.d.)

Recent increases in insurance coverage in various M&A scenarios, according to Heinz, demonstrate the transformative nature of insurance. "There will always be unknowns in transactions, which can cause a company to terminate a contract or result in hundreds of millions of dollars of unforeseen exposure. The insurance markets can assist in analyzing these risks and bringing capital options to the table to resolve them, thereby maximizing the value of a transaction" (www.aon.com, n.d.)

Violating representations and warranties

Every M&A transaction entails a degree of buyer-seller risk relating to unforeseen liabilities, such as pre-closing tax issues and accounting errors. Typically, these risks are addressed by negotiating the seller's representations and warranties regarding the objective asset. Matt Heinz, senior managing director and co-practice leader of Aon's M&A and Transaction Solutions, notes that attorneys now address this risk with representations and warranties insurance (RWI) as opposed to a robust seller indemnity or escrow. Historically, vendors would leave between 10 and 20 percent of a transaction's purchase price as an indemnity to cover breach risk. Now, instead of spending the time, money, and goodwill necessary to negotiate such an indemnity, deal parties are purchasing RWI to cover the same risk – often with slightly better terms and a longer duration of recovery than a standard indemnity (www.aon.com, n.d.).

This procedure substitutes an objective third-party insurer for the vendors in order to recover losses. By utilizing RWI, potential buyers can submit more aggressive bids when endeavouring to acquire a business, and such an arrangement allows sellers to exit with more cash at closing. Aon estimates that more than 45 percent of M&A transactions in North America now involve RWI, up from 34 percent in 2017. According to Heinz (www.aon.com, n.d.), "This increase indicates that sellers are utilizing insurance to achieve cleaner exits, and buyers are realizing they can be more competitive (while still being protected) by purchasing insurance instead of the traditional indemnity/escrow structure.

M&A Considerations and Consequences

In M&A transactions, executives, investment bankers, and other stakeholders must consider several crucial factors, including:

- Form of payment (cash versus shares)
- Purchase Cost Distribution
- Tax consequences of M&A Asset Sale
- Estimating and Valuing synergies
- Strategic justifications for M&A
- The "intangibles" of a transaction.

1. Form of payment (cash versus shares)

Several factors must be considered before a company can consider a merger or acquisition (Corporate Finance Institute, n.d.).

Cash vs. Stock Investment Ratio

The first factor to consider is how sellers are compensated and how customers pay. There are numerous methods for compensating a business vendor in the event of a merger or acquisition. These methods of compensation can be extensive and intricate.

Typically, the payment consists of cash, company stock, a note payable (seller financing), or a combination of the three. Typically, the consumer obtains the funds through debt or equity. Whether a consumer pays with company stock, cash, or a note depends on a variety of transaction-specific variables.

Influence on Pro-forma EPS and Shareholding

Next is the effect that the acquisition will have on the purchaser once the transaction is finalized. Using a merger model, the financials of the two merged companies must be analysed. This analysis seeks to determine how the merger will affect the buyer's earnings per share (EPS). A rise in EPS is known as Accretion, while a decline is known as Dilution. Finally, this analysis will determine whether the merger or acquisition will be financially advantageous to the bottom line of the new owner.

Influence on Credit Data

What effect the buyer's payment method could have on the buyer's credit is another factor to consider when deciding how the buyer will acquire the company at hand. Every time a business makes a significant purchase using a note or borrowed funds, a credit report will be pulled and the business will incur debt. In turn, this may lower the acquirer's credit rating.

2. Purchase Cost Distribution

Acquisitions and mergers necessitate numerous financial and tax reports.

Purchase Cost Distribution

The acquisition accounting procedure includes purchase price allocation (PPA). This is the allocation of the purchase price to the included assets and liabilities in the transaction. This allocation adjusts the fair market value (FMV) of the acquired assets and liabilities. If the purchase price is still greater than the FMV of net assets (assets minus liabilities), then the difference represents Goodwill, an intangible asset.

Purchase price allocation occurs when a company (the acquirer) acquires a second company and allocates the purchase price to the company's assets and liabilities. This method is utilized for financial records and occasionally tax objectives.

Depreciation and Amortization from New Writings.

In direct correlation with the purchase price allocation of the acquired net assets, the collected write-up values of tangible and intangible assets must be depreciated and amortized over time and reported as such on the income statement.

Creation of favour

As discussed previously, goodwill is an intangible asset that arises when one business acquires another.

Goodwill is typically not subject to periodic amortization and consists of elements such as the market value of a company's brand name, customer relations, and a stable workplace. Because it cannot be seen or handled, goodwill is categorized as an intangible asset. This is crucial when merging or acquiring another business, as the goodwill will be conveyed to the buyer.

3. Tax consequences of M&A Asset Sale

Tax-wise, asset transactions are advantageous for buyers because the assets will receive higher depreciation deductions (due to fair market value write-ups), which will reduce the buyer's future cash taxes. This is due to the fact that many tax authorities permit the target's tax records to be annotated to fair market value, just as the acquirer would do when calculating the purchase price allocation in accordance with GAAP or IFRS rules.

Stock Sale

If the transaction is treated as a stock sale as opposed to an asset sale, the tax burden will almost always be minimized. The reason is because the vendor must pay an immediate tax on its gain when selling assets; therefore, this is not the seller's preferred option. With stock sales, individual assets retain their nature, tax basis, and holding periods. Although there are exceptions (see following paragraph), the majority of tax authorities do not permit a target's tax records to be changed during a stock sale.

4. Estimating and Valuing synergies

Synergy is the added value created by the merger of two companies, which creates opportunities that would not have been available had these companies continued to operate independently. Synergies are methods to increase profit and earnings per share through an acquisition or a merger (i.e., this is the reason why companies merge).

Estimating and valuing synergies in mergers and acquisitions is based on quantifying the value of the benefits that various synergies will bring (also known as the buyer's value increase). For example, an acquirer acquires a target. The acquirer already has a CEO, so the CEO of the target company would be let go, resulting in a higher profit margin.

To effect value, a synergy must influence the company in at least one of the following ways:

- Extend the growth period
- Reduce the firm's cost of capital
- Boost cash flows from existing assets
- Boost the firm's anticipated growth rates

5. Strategic justifications for M&A

Adding value to a company by merging it with another will generate logical synergies.

- Operating synergy
- Financial synergy
- Growth

- Market Power
- Tax Savings for Corporations
- Retirement
- Tax Incentives
- Market / Business / Product Line Concerns
- Acquire Necessary Resources (customers, personnel, etc.)

6. The "intangibles" of a transaction.

Intangible assets are those that are immaterial in essence. In this instance, some intangibles of an M&A transaction may include the following:

- A patent
- Customer lists
- Employee non-compete clauses lasting five years
- Unpatentable technology
- Trademarks
- Copyrights
- Business methods
- Goodwill
- Brand recognition

Methodologies for the effective execution of Merger and Acquisition

Mergers and acquisitions (M&A) can be an effective method for businesses to attain their strategic goals, such as expansion, diversification, and competitive advantage. However, mergers and acquisitions can be complex and risky, necessitating cautious planning, execution, and integration in order to realize the

intended benefits. Companies must therefore adhere to best practices for successful M&A execution (legalserviceindia.com, n.d.).

Practices to consider

Prior to engaging in an M&A transaction, it is crucial to establish a strategy that aligns with the organization's overall business objectives. This strategy should consider target markets, synergies, the competitive environment, and financial objectives.

Due diligence is an essential phase in the M&A process because it enables companies to evaluate the risks and opportunities associated with the target company. This entails examining financial statements, legal contracts, intellectual property, and other crucial business aspects.

Cultural differences between the two companies can pose significant obstacles to the success of a merger or acquisition. Consequently, it is crucial to resolve cultural differences and develop a shared vision for the merged entity. This may involve establishing communication channels, establishing employee expectations, and providing training.

Mergers and acquisitions can involve significant financial risks, such as overpaying for the target company, underestimating integration costs, and failing to realize intended benefits. Consequently, businesses must conduct exhaustive risk assessments and devise mitigation strategies to effectively manage financial risks.

M&A transactions may be governed by a variety of laws and regulations governing mergers and acquisitions. To avoid legal and financial consequences, including fines, penalties, and harm to one's reputation, it is essential to adhere to regulatory requirements.

Integration is a crucial aspect of M&A success because it enables companies to realize the intended benefits of the transaction. Therefore, it is necessary to develop a comprehensive integration plan that takes into account technology, culture, human capital, and communication.

Effective communication is crucial to the success of mergers and acquisitions because it serves to establish transparency, build trust, and keep stakeholders informed throughout the process. This includes communicating with employees, clients, suppliers, and shareholders.

Finally, it is crucial to measure and monitor progress throughout the M&A process to ensure that the transaction is achieving its intended goals. This includes establishing metrics, monitoring progress, and making necessary adjustments.

Conclusion

M&A can play a crucial role in achieving corporate strategy by allowing businesses to diversify their operations, obtain economies of scale, increase market share, gain access to new resources, and create synergies between businesses. M&A can also be a complex and risky process that necessitates cautious planning, due diligence, and integration to achieve the intended benefits. To be successful in mergers and acquisitions, companies must develop a clear strategy, conduct exhaustive due diligence, address cultural differences, assess and mitigate financial

risks, comply with regulatory requirements, and integrate the acquired company effectively. Companies can position themselves for growth, competitiveness, and long-term success in their respective industries by adhering to best practices and utilizing mergers and acquisitions as a strategic tool.

However, successful M&A execution requires careful planning, execution, and integration, as well as adherence to best practices such as developing a clear strategy, conducting exhaustive due diligence, addressing cultural differences, assessing and mitigating financial risks, complying with regulatory requirements, integrating the acquired company effectively, communicating effectively, and measuring and monitoring progress.

M&A transactions can provide significant benefits to companies, including access to new markets and customers, enhanced capabilities and resources, and an increase in shareholder value when executed effectively (Finance Institute, n.d.). As a result, businesses must evaluate the potential benefits and risks of M&A transactions within the context of their overall corporate strategies and implement best practices to ensure successful execution.

REFERENCES

1. Bragg, S. (n.d.). *Triangular merger definition*. [online] AccountingTools. Available at: <https://www.accountingtools.com/articles/the-triangular-merger>.
2. content.next.westlaw.com. (n.d.). *Two-Step Merger | Practical Law*. [online] Available at: [https://content.next.westlaw.com/practical-law/document/I3a9a0e5bef1211e28578f7ccc38dcbee/Two-Step-Merger?viewType=FullText&transitionType=Default&contextData=\(sc.Default\)&firstPage=true](https://content.next.westlaw.com/practical-law/document/I3a9a0e5bef1211e28578f7ccc38dcbee/Two-Step-Merger?viewType=FullText&transitionType=Default&contextData=(sc.Default)&firstPage=true) [Accessed 26 Apr. 2023].
3. Finance Institute. (n.d.). *M&A Considerations and Implications*. [online] Available at: <https://corporatefinanceinstitute.com/resources/valuation/ma-mergers-acquisitions-considerations/>.
4. Divestopedia.com. (n.d.). *What is a Conglomerate Acquisition? - Definition from Divestopedia*. [online] Available at: <https://www.divestopedia.com/definition/5019/conglomerate-acquisition>
5. Hargrave, M. (2019). *Merger*. [online] Investopedia. Available at: <https://www.investopedia.com/terms/m/merger.asp>.
6. legalserviceindia.com. (n.d.). *Role Of The Merger And Acquisition In Achieving The Corporate Strategy*. [online] Available at: <https://legalserviceindia.com/legal/article-10966-role-of-the-merger->

and-acquisition-in-achieving-the-corporate-strategy.html [Accessed 26 Apr. 2023].

7. Migrator (2004). *Benefits of mergers and acquisitions*. [online] nibusinessinfo.co.uk. Available at: <https://www.nibusinessinfo.co.uk/content/benefits-mergers-and-acquisitions>.
8. Skowronski, J. (2022). *What Is an Acquisition? Definition, Types, and Examples*. [online] Forage. Available at: <https://www.theforage.com/blog/skills/acquisition>.
9. www.aon.com. (n.d.). *Mergers & Acquisitions: 5 Risks That Threaten Transactions* / Aon. [online] Available at: <https://www.aon.com/unitedkingdom/insights/5-risks-that-threaten-transactions.jsp>.
10. www.contractscounsel.com. (n.d.). *Asset Acquisition: Definition and Examples (2022)*. [online] Available at: <https://www.contractscounsel.com/g/89/us/asset-acquisition>.
11. www.wolterskluwer.com. (n.d.). *Companies buying companies: The different types and methods of mergers and acquisitions*. [online] Available at: <https://www.wolterskluwer.com/en/expert-insights/the-different-types-and-methods-of-mergers-and-acquisitions>.

The banner is divided into two main sections by a vertical white curve. The left section has a dark red background and contains the university's logo (a shield with the letters 'PH') and the text 'ЮГОЗАПАДЕН УНИВЕРСИТЕТ „НЕОФИТ РИЛСКИ“'. Below this, it says 'Прием ОКС „МАГИСТЪР“'. The right section has a light beige background and features a logo with a book, a bar chart, and a pie chart. To the right of this logo is the text 'СТОПАНСКИ ФАКУЛТЕТ'. At the bottom right, the word 'Одит' is written in a large, dark red serif font.

COVID-19 AND THE GLOBAL FINANCIAL CRISIS: A TALE OF TWO CRISES *

Afroditi Charisi⁴

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

This paper presents a brief summary of the comparative study between the COVID-19 pandemic and the Global Financial Crisis (GFC) of 2008. Despite having distinct origins, both crises have had a significant impact on global economies. The COVID-19 pandemic arose as a worldwide health crisis that necessitated strict lockdown measures and resulted in a rapid decline in economic activity. On the other hand, the GFC originated from weaknesses within the financial sector and caused a global recession characterized by bank failures and reduced economic output. Despite their differences, both crises led to an increase in unemployment rates and required significant policy interventions. Central banks implemented expansive monetary policies, while governments adopted fiscal stimulus packages to mitigate the economic consequences. It is critical to comprehend the similarities and differences between these crises to develop effective policies and build more resilient economies to combat future challenges.

Keywords: *Global Financial Crisis, COVID-19 pandemic, Fiscal Policy*

JEL Codes: *G01, E62, F55, I15*

1. Introduction: Parallel Trajectories

Two significant global events that have left an indelible mark on societies and economies across the world are the COVID-19 pandemic and the Global Financial Crisis (GFC) of 2008. Although the GFC was initially a financial crisis, its impact had far-reaching economic consequences. The COVID-19 pandemic, on the other hand, began as a health crisis but rapidly escalated into a social and economic catastrophe. This paper endeavors to scrutinize the similarities and distinctions between these two crises. It will closely examine the reasons for their occurrence, their repercussions, the measures taken in response, and the lasting effects they will have. According to MarcOlivier Strauss-Kahn (2020), there are main similarities between the COVID-19 pandemic and those of financial crisis of 2008. The first similarity is the feeling of uncertainty with their appearance in the two largest economies in the world, USA and China. The second common feature was the collapse of the economy with the steep reduction of the country's reserves and the third was the reactions of the international economic community and national economies through the implementation of monetary and fiscal policies to limit the spillover effect (Spatt, 2020). It is evident that in the current health crisis, the markets will not address the issue at hand, it is necessary to devise a solution that involves aggressive policy intervention and global coordination (Lustig & Mariscal, 2020).

⁴ PhD candidate at Faculty of Economics, SWU "Neofit Rilski", Blagoevgrad.

The collapse of the US housing market catalyzed the Global Financial Crisis, which revealed fundamental flaws in the international economic framework. These flaws were the consequence of imprudent lending practices, the securitization of mortgage debt, and the inadequate regulation and supervision of financial institutions. Ultimately, these factors triggered a chain reaction that culminated in the failure of significant financial entities and a critical shortage of credit. The Global Financial Crisis (GFC) created a ripple effect of economic turmoil that spread throughout multiple sectors and international economies. In response, governments and central banks implemented unprecedented fiscal stimulus packages, monetary interventions, and regulatory reforms to stabilize financial markets and prevent a total economic collapse.

Conversely, the COVID-19 pandemic surfaced as a notable health crisis, where a novel coronavirus spread quickly, causing widespread sickness and loss of life. The virus's high level of transmissibility required strict public health measures, which included travel restrictions, lockdowns, and guidelines for social distancing. Although these measures were necessary to diminish the health impact, they had significant economic outcomes. Many businesses had to shut down, supply chains were interrupted, and millions of individuals were unemployed. In response to the economic impact of the pandemic, governments across the globe have implemented substantial financial packages with the goal of providing relief to affected individuals and businesses and avoiding a more severe recession. Alongside these fiscal measures, central banks have also taken monetary steps to stabilize financial markets and guarantee the continued operation of the banking system. These measures include the reduction of interest rates and the provision of liquidity support.

During the unfolding of both crises, significant dissimilarities in their effects and corresponding policy reactions emerged. The global financial crisis (GFC) had a mainly financial sector impact, leading to a worldwide recession. In contrast, the COVID-19 pandemic had a direct impact on public health, subsequent to which an economic downturn occurred. The policy responses to the two crises also varied significantly, with the GFC necessitating considerable financial sector reforms, while the COVID-19 pandemic requiring extensive health measures and economic support.

2. Causes, Origins and Impact

The financial sector, specifically the housing market bubble in the United States, was the source of the GFC. Financial institutions took excessive risks due to subprime lending, securitization of mortgage debt, and insufficient regulation. According to the IMF 2019 report, the expenses incurred may pose a threat to the health of the global banking system, further prolonging the economic downturn (IMF, 2019). The fall of the housing market resulted in a chain reaction, causing the downfall of major financial institutions and an international credit shortage. The causes behind the Global Financial Crisis (GFC) and the current COVID-19 pandemic crisis are markedly distinct. As some of the biggest banks in the world faced a severe liquidity crisis, the GFC emerged, leading to government intervention to avoid a collapse

(Davies 2015). The World Health Organization's declaration of a global outbreak following the initial emergency in Wuhan, China in December 2019 resulted in the COVID-19 pandemic (Mathieu et al. 2021).

The impact of the abnormal exogenous shocks from the two crises resulted in an unparalleled surge in uncertainty, causing severe repercussions on global supply chains and international financial markets (Didier et al. 2021; Foroni et al. 2021; Haran et al. 2013). As a response to market investors' panic, several jurisdictions have implemented quantitative easing policies with the goal of offering temporary solutions (Zhang et al. 2020). As a response to market investors' panic, several jurisdictions have implemented quantitative easing policies with the goal of offering temporary solutions.

The private sector's liquidity underwent significant changes due to two crises. The Global Financial Crisis (GFC) caused a scarcity of commercial financing. In contrast, the pandemic crisis led to a deficiency of revenue (McGee and Mayer, 2021; Tsai and Tsai 2017). In both situations, private enterprises and low-income neighborhoods received extraordinary grants and financial assistance from the government. As a result, expenses for subsidies rose, while revenues from taxes declined (Didier et al. 2021; Roper and Turner 2020; Shehzad et al. 2020). Given the similarities between the two critical periods, the lessons derived from the GFC can prove to be extremely valuable in dealing with the aftermath of the COVID-19 crisis (Castelblanco, Guevara & Salazar, 2022; KOF Swiss Economic Institute 2021).

The economic effects of the GFC were extensive, with consequences that spanned the globe. The recession that resulted from the crisis caused a decrease in economic activity, job loss, and reduced consumer spending. Financial institutions struggled with insolvency, while stock markets and housing prices dropped significantly. The repercussions of the GFC were long-lasting, and governments around the world intervened with a variety of methods to restore stability to financial markets and encourage economic growth.

The COVID-19 pandemic has left an indelible impression on the global economy, unlike anything seen before. The pandemic caused a major upheaval in supply chains, resulting in extensive closures of businesses and a significant loss of jobs. The lockdowns and travel restrictions implemented to contain the virus have had a devastating effect on entire industries such as aviation, hospitality, and tourism. To counteract the economic fallout, governments have implemented both fiscal stimulus packages and monetary interventions. However, the economic recovery remains unpredictable and uneven.

3. Policy Responses and Consequences

In response to the Global Financial Crisis (GFC), governments and central banks took various measures to mitigate its effects. To stabilize financial markets and support struggling industries, fiscal stimulus packages were implemented to increase aggregate demand. Central banks implemented unconventional monetary policies such as quantitative easing to infuse liquidity into the financial system. Additionally,

regulatory reforms were introduced to enhance financial oversight and prevent potential future crises. It has been determined through research that the economic ramifications of the COVID-19 pandemic are more severe than those of the global financial crisis. Additionally, the probability of a recession resulting from the current pandemic is not as high as it was during the global financial crisis (Li et al., 2022).

Governments worldwide have implemented different policy responses to address the COVID-19 pandemic, but some common elements are shared. Measures such as lockdowns and travel restrictions have been put in place to curb the spread of the virus. Fiscal stimulus packages have also been introduced to alleviate the economic impact of the pandemic. These packages aim to safeguard businesses, preserve employment opportunities, and provide social safety nets for affected individuals. Additionally, central banks have implemented monetary easing measures and provided liquidity support to stabilize financial markets.

The Global Financial Crisis (GFC) had far-reaching ramifications for both economies and societies. It brought to light the fragility of financial systems and emphasized the necessity for more stringent regulatory supervision. In response, governments enacted measures to bolster financial stability, such as more rigorous capital prerequisites and heightened risk management techniques. The GFC also resulted in a rise in public debt, sluggish economic expansion, and sustained unemployment rates in certain areas. Moreover, it played a role in the erosion of confidence in financial institutions and amplified the influence of populist movements.

The impact of the COVID-19 pandemic is expected to have long-lasting effects on both societies and economies worldwide. One of the critical lessons learned from this crisis is the vulnerability and interdependence of global supply chains. This realization has compelled nations to reconsider their dependence on specific industries and explore alternative strategies for diversification. The pandemic has also expedited the digital transformation of businesses and governments, leading to an increase in remote work and online services. This transformation could have significant long-term effects on labor markets, job structures, and income inequality.

The healthcare systems around the world have been drastically affected by the ongoing COVID-19 crisis. As a result, policymakers and governments have started acknowledging the significance of investing in healthcare infrastructure, improving access to quality healthcare services, and reinforcing public health systems. The pandemic has brought to light the need for enhanced response and preparedness mechanisms, such as the creation and dissemination of vaccines and therapeutics. Additionally, one can expect a surge in the emphasis on research and development in public health, along with an increase in funding for pandemic preparedness and surveillance systems.

In the fight against the pandemic, global cooperation and collaboration have been of the utmost importance. The exchange of scientific knowledge, data, and best practices has been crucial in both comprehending and mitigating the virus's spread. The COVID-19 crisis has emphasized the necessity of stronger international institutions and coordination to effectively address worldwide health crises. There is a predicted resurgence in efforts to reinforce international health organizations such

as the World Health Organization (WHO), as well as the creation of mechanisms for the prompt detection and response to future pandemics.

The aftermath of COVID-19 on the economy is expected to have far-reaching effects. In response to the economic downturn caused by the pandemic, governments across the globe have put into place significant fiscal stimulus packages aimed at supporting affected businesses and households.

When public debt is high, it can lead to long-term consequences such as reduced public spending in key areas like infrastructure and education, potential austerity measures, and slower economic growth.

The existing inequalities within societies have been further aggravated by the pandemic. The most vulnerable groups, such as low-wage workers, women, and marginalized communities, have been affected in an unequal proportion due to the reduction of essential services, loss of jobs, and increased health risks.

The effects of the COVID-19 crisis on a global scale have been extensive, particularly in the realms of international relations and governance. Multilateral institutions have been pushed to their limits and their efficacy has been examined. The pandemic has brought to light the geopolitical strains that exist and amplified the necessity for nations to work together in harmony and with a unified front. The lessons gleaned from this pandemic could have a lasting impact on the future of global governance, with a heightened emphasis on collective action, shared responsibility, and the importance of multilateralism. According to research, it is crucial for both government and non-government agencies to take a significant and responsible role in not only developing sound policies and laws, but also in ensuring proper implementation, coordination, and raising awareness among the public and businesses (Ali et al., 2022). The aftermath of the economic crash in 2008, as well as the current response to COVID-19, demonstrate that the deregulation of neoliberal policies leads to the opposite of the freedom that "Chicago school" economics claims to promote (Buchholz, 2020).

4. Conclusion and Recommendations

Although they share a timeline, the COVID-19 pandemic and the Global Financial Crisis were separate crises with unique roots, repercussions, and approaches to resolution. The GFC was born out of the financial industry, leading to a worldwide economic downturn, whereas COVID-19 was initially a health emergency, but it had extensive economic implications. Despite these differences, policymakers and communities globally can learn critical lessons from both crises. In order to effectively handle crises like the global financial crisis and the COVID-19 pandemic, it is imperative to have prompt and well-coordinated international responses, healthcare systems with the capacity to endure unexpected shocks, and financial regulations that are strong and stable. The aftermath of these events highlights the importance of constantly adapting, managing risks, and working together to construct a more durable and sustainable worldwide economy and healthcare framework.

The COVID-19 pandemic has highlighted the significance of investing in public health, bolstering international health organizations, and cultivating global cooperation. It has also expedited the digitalization of various sectors, reshaped the

labor market, and exacerbated societal disparities. To address these enduring outcomes, it will be necessary to implement tailored policy measures, establish comprehensive social protection systems, and renew our dedication to fostering inclusive and sustainable development.

As we confront the obstacles of a world in the aftermath of the pandemic, we can utilize the wisdom gained from both crises to direct us towards a future that is more robust and just. By incorporating these insights into the frameworks of our policies and nurturing global collaboration, we can alleviate the consequences of subsequent crises and cultivate an enduring and all-encompassing expansion.

REFERENCES

- Ali, M.J., Bhuiyan, A.B., Zulkifli, N. and Hassan, M.K. (2022). "The COVID-19 Pandemic: Conceptual Framework for the Global Economic Impacts and Recovery", Hassan, M.K., Muneeza, A. and Sarea, A.M. (Ed.) *Towards a Post-Covid Global Financial System*, Emerald Publishing Limited, Bingley, pp. 225-242. <https://doi.org/10.1108/978-1-80071-625-420210012>
- Buchholz, K. (2020). Infographic: What Share of The World Population Is Already On COVID19 Lockdown? [online] Statista Infographics. Available at: <https://www.statista.com/chart/21240/enforced-covid-19-lockdowns-by-people-affected-per-country/>
- Castelblanco, G., Guevara, J., & Salazar, J. (2022). Remedies to the PPP crisis in the COVID-19 pandemic: Lessons from the 2008 global financial crisis. *Journal of Management in Engineering*, 38(3), 04022017.
- Davies, P. (2015). The fall and rise of debt: bank capital regulation after the crisis. *European Business Organization Law Review*, 16(3), 491-512.
- Didier, T., F. Huneus, M. Larrain, and S. L. Schmukler. 2021. "Financing firms in hibernation during the COVID-19 pandemic." *J. Finance Stab.* 53 (Apr): 100837. <https://doi.org/10.1016/j.jfs.2020.100837>
- Froni, C., Marcellino, M., & Stevanovic, D. (2022). Forecasting the Covid-19 recession and recovery: Lessons from the financial crisis. *International Journal of Forecasting*, 38(2), 596-612.
- Haran, M., McCord, M., Hutchison, N., McGreal, S., Adair, A., Berry, J., & Kashyap, A. (2013). Financial structure of PPPs deals post-GFC: an international perspective. *Journal of Financial Management of Property and Construction*.
- IMF (2019). *Global Financial Stability Report: Lower for Longer*, October.
- Lustig, N., & Mariscal, J. (2020). 20 How COVID-19 could be like the Global Financial Crisis (or worse). *Mitigating the COVID economic crisis: Act fast and do whatever*, pp. 185-190.

- Mathieu, E., H. Ritchie, E. Ortiz-Ospina, M. Roser, J. Hasell, C. Appel, C. Giattino, and L. Rodés-Guirao. 2021. "A global database of COVID-19 vaccinations." *Nat. Hum. Behav.* 5 (7): 947–953. <https://doi.org/101038/s41562-021-01122-8>
- McGee, C., & Mayer, M. (2021). Pitfalls and potholes: Examining the impacts of Covid-19 on the North Carolina Department of Transportation. *Public Works Management & Policy*, 26(1), 13-18.
- Reinhart, C. M. and Rogoff, K. S. 2009. The aftermath of financial crises. *American Economic Review*, 99(2), pp.466-72.
- Roper, S., & Turner, J. (2020). R&D and innovation after COVID-19: What can we expect? A review of prior research and data trends after the great financial crisis. *International Small Business Journal*, 38(6), 504-514.
- Shehzad, K., Xiaoxing, L., & Kazouz, H. (2020). COVID-19's disasters are perilous than Global Financial Crisis: A rumor or fact?. *Finance research letters*, 36, 101669.
- Spat, C. S. (2020). A tale of two crises: The 2008 mortgage meltdown and the 2020 COVID-19 crisis. *The Review of Asset Pricing Studies*, 10(4), 759-790.
- Strauss-Kahn, M. O. (2020). Can we compare the COVID-19 and 2008 crises. *Atlantic Council*, 5, 2020.
- Swiss Economic Institute (2021). Comparing the coronavirus crisis and the financial crisis: eight differences and similarities. *KOF Bulletin*. Li, Z., Farmanesh, P., Kirikkaleli, D., & Itani, R. (2022). A comparative analysis of COVID-19 and global financial crises: evidence from US economy. *Economic Research-Ekonomska Istraživanja*, 35(1), 2427-2441.
- Tsai, I. C., & Tsai, H. C. (2017). The price concessions of high-and low-priced housing in a period of financial crisis. *Quantitative Finance and Economics*, 1(1), 94-113.
- Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance research letters*, 36, 101528.



ЮГОЗАПАДЕН
УНИВЕРСИТЕТ
„НЕОФИТ РИЛСКИ“



СТОПАНСКИ
ФАКУЛТЕТ

Прием
ОКС
„МАГИСТЪР“

Дигитални
финанси
FINTECH

ФИНАНСОВА СИСТЕМА И НЕЙНАТА РОЛЯ ЗА ВЪЗСТАНОВЯВАНЕ И УСТОЙЧИВОСТ НА ИКОНОМИКАТА*

Донка Гърчева⁵

Received: 07.06.2023, Accepted: 21.06.2023

Резюме

По време на финансовата криза банките в България налагат относително ограничение на кредитния ресурс. Висока цена на заемания капитал. Преди това и в годините на затихването на кризата. Банките стоят далеч секютиризирането на активи и с твърде незначителни позиции в рисков ценни книжа. Така те не помагат за развитието на българският капиталов пазар, поддържат капиталовата алокация с ниска възвръщаемост и реализират символичен доход за привлечените активи.

Ключови думи: финансова система, банки, криза, пандемия

JEL Codes: G2; G21

Банките са твърде важни за всяка финансова система. Но когато капиталът им с произход от една дестинация, те привнасят допълнителен риск към националната икономика. По време на финансовата криза банките в България налагат относително ограничение на кредитния ресурс. Висока цена на заемания капитал. Преди това и в годините на затихването на кризата. Банките стоят далеч секютиризирането на активи и с твърде незначителни позиции в рисков ценни книжа. Така те не помагат за развитието на българският капиталов пазар, поддържат капиталовата алокация с ниска възвръщаемост и реализират символичен доход за привлечените активи. Индустиалните небанкови инвеститори, от друга страна, опитват пазарното поведение, но липсата на качествени инвестиционни активи държи високи позициите им в държавен дълг с ниска доходност. Чрез сравнение и анализ на инвестиционните портфейли на българските финансови институции, изследването опитва да докаже, че банките могат да помогнат повече за развитието, както на българската икономика, така и на националния капиталов пазар. Пазарно ориентираното банкиране е начин за постигане на по-висока възвръщаемост за инвеститорите и банковите клиенти, но и важен канал за нарастване на предлагането на качествени активи и за формиране на инвестиционното търсене.

Основни теза: Финансовата система безспорно е важна част от националната икономика и според Rousseau & Silla (2003) се състои от пет

⁵ Редовен докторант в Катедра “Финанси и отчетност“ на Стопански факултет, ЮЗУ Н. Рилски, Благоевград; e-mail: donkagarchevaa@gmail.com

ключови компонента - стабилни публични финанси, разумно управление на дълга и стабилни парични споразумения, множество банки някой насочени към местната икономика, други – към чуждестранните пазари, както и такива със смесен профил, централната банка, която да стабилизира националните финанси и да управлява външните финансови отношения на националната икономика, добре функциониращи пазари на ценни книжа.⁶

Като част от икономическата система, финансовата система би следвало да опосредства финансовите отношения на икономическите субекти и да създаде оптимални условия за националната икономика. Това включва привличането на капитал чрез кредити или публично предлагане на акции и облигации, съответно вторичната търговия с дълг и собственост и атрактивен инвестиционен процес, сигурна и ефективна платежна система, стабилни публични финанси. Не на последно място е ролята на алтернативните канали на финансиране - рисковите инвеститори и търговския кредит. Внедряване на електронния маркетинг и новите технологии, като машини и съоръжения. Банките се възползват от Европейски програми от Covid-19 за олекотяване работата на служителите и маркетингови решения за цифровизация.

Основни тези са, че без финансовите системи живота е немислим. Ключови компоненти е финансова система, компонента на кривите на Rousseau & Silla. Изследваните показва няколко показателя доказани, без който е невъзможно съществуването на икономиката и човешката намеса. Изследването показва, че колкото и да се внедряват нови технологии и иновации, човешкият фактор е незаменим. Доказателство за това са:

- Усвояване на средства по Европейски проекти
- Иновации, за нови канали в мобилните устройства всичко да е на един клик отстояние. Всичко да оперираш сам и прегледно и прозрачно и координираност. Това изследване разглежда много ограничен аспект на функциите на финансовата система, а именно спестяванията и достъпа до канал за частните субекти – бизнес и граждани и качествата на инвестиционния процес (първичната и вторичната търговия с финансови инструменти), чрез два вида финансови инструменти – банките и небанковите финансови инструменти в България също за периода 2008-2018 г. и същата ситуация е за 2019, 2020, 2021, 2022, 2023г – пандемията. В този смисъл изводите за качествата на различните финансови посредници и значението им за икономическия просперитет няма да са относими към платежната система, публичните финанси и централното банкиране.

⁶ Икономическа мисъл – Economic Thought 2/2018- Българска академия на науките

- Непредвидени ситуации и изменение в икономически аспект, като Covid-19, войната в Украйна и военните действия на Русия. Политическата насоченост за помощ на Украйна.
- Промените, който ще се отразят на банковото система в Световен и национален мащаб.
- Спестителите, кредитополучателите , инвеститорите и емитентите вземат решения в условията на националната финансова система , но и като отчитат възможностите на чуждестранните капиталови пазари и банки. Това означава, че инвестициите им са съобразени с особеностите на капиталовия или кредитния национален пазар, а именно нива на риск и на информациялна асиметрия, реални изисквания за прозрачност, пазарна ликвидност, възможности за диверсификация поради качеството на наличните инвестиционни активи, възможна възвръщаемост, защита на правата на собственост и на изпълнението на договорите (което поставя финансовата система в опасна зависимост от правната), транзакционните разходи (определя се от нивото на индустриалната ефективност – на институциите на капиталовия пазар и банките, но и на пазарната инфраструктура и надзорните институции). Споменатите особености се отчитат и от чуждестранните инвеститори и кредитни институции. Наличието на посочените по-горе условия е задължително за ефективната алокация на ограничените икономически ресурси. Основна функция на финансовата система, що се отнася до условията за икономически растеж.

Налице са следните доказателства. За разлика от спестителите, финансовите институции могат да променят качествата на кредитната система и инвестиционния процес, тъй като те вземат инвестиционни решения и създават предлагането на активи и канали за финансиране. Те разполагат с огромни фондове, сравними с националния брутен продукт, а голяма част от тях са притежателите на институции от ЕС с внушителна история и компетентности.

Обект на изследването са работещите в България финансови посредници, а субект – инвестиционните им решения. Методологията на изследването включва логически анализ на данни и изводи на база на резултатите.

Банковата система в България е изправена пред най-сериозното си предизвикателство за последните десет години - Световна пандемия от Covid-19. Поради неразривната свързаност между реален и финансов сектор трусовете се трансформират в заплахи за кредитните институции. Настоящата разработка е посветена на анализирането на негативните последици от макроикономическия шок (пандемията) върху целия банков сектор. То се осъществява с помощта на матричния инструментариум, представляващ банковата система като мрежа , състояща се от възли (институциите) и връзки (междубанковите институции). Чрез прилагането на стрес тестове на фалити

на банките се оценява реакцията „мрежова структура – банкова устойчивост“ в условията на кризисна икономическа ситуация⁷.

Контролното връщане назад – фактор за управленска устойчивост. Човешката психика е устроена така, че както в групов така и в личен аспект вниманието е насочено към успеха. Да се говори за връщане назад е най-малкото странно. Все пак да се мотивира такова необичайно поведение трябва да се дефинира философията на успеха. Това, което би могло да се приеме в най-общ план е, че успехът е субективно възприятие на определено състояние на личността, в което се включват състоянието на духа и начинът на възприемане от околните. В този смисъл успехът е свързан със самосъзнанието, т. е. със способности на човек да мисли и разсъждава за собственото си поведение и да прави преценка за отношението на другите към него. Независимо дали става въпрос за личност, група или социална система, успехът се свързва с преодоляването на нещо, с постигането на определена цел. Това, което е предопределяно, решено към проблем, е обектът на успеха, а страната която го е преодоляла, встъпва в ролята на субект. Успехът като желание за развитие и напредък е лимитиран. Ограниченията са пряко свързани с потенциала на личността, респективно на групите и организациите. Да не се разбира водената политика, да се натрупва задлъжнялост в отношенията или да се допускат грешки при изпълнението на задачите, е сериозна пречка пред успеха. Не по – малко съществен ограничител е и неподходящата среда за проява на действителния потенциал. Пряката връзка между потенциала и успеха подсказва, че едно от основните различия между лоялната и нелоялната конкуренция се дължи именно на определени несъответствия между тях. Това пък от своя страна поставя въпроса за нормативната база и нейната връзка с морала и успеха. Най-добре е, когато моралните и правните норми във всяка морална система си съответстват. Не са редки обаче и случаите на разминаване, т.е. някои резултати от поведението могат да се приемат като морални, но съответстващи на нормативната база, а други да й съответстват, но да се определят от обществото като неморални. Не е изключено и в личен или в групов план да е налице и резултат, смятан за успех, но той да не съответства например на глобалните цели на организацията, както и обратното – глобалните цели да се реализират, но в отделни личности или групи да се породи чувството на неудовлетвореност. Казаното потвърждава субективното усещане и относителния характер на успеха. Субективното усещане за успех произтича от това, че понякога субектът на успеха може да засегне интересите на цялата организация и да е свързан със стратегическото ѝ развитие, но отделни нейни членове или групи да чувстват неудовлетвореност за определен момент или

⁷ Икономическа мисъл – Economic Thought 3/2018 -Българска академия на науките

период. В такива случаи личният или груповият интерес се разминава със стратегическите цели и е възможно да доведе до демотивиране на част от персонала. Не е изключен и обратният вариант, когато перспективите са неясни, стратегическите цели не са дефинирани правилно, върви се, образно казано, на „къси светлини“, но за отделни личности или групи това е изгодно и в субективен план те дават позитивна оценка за състоянието на организацията. Отчитането на подобен псевдоуспех е временна заблуда или нездрав интерес на определени среди, но същевременно е сигнал за приближаващи конфликти или кризи. Успехът трябва да се разграничава от конкретния резултат, въпреки че последният е част от него. Стойността на успеха се изразява във времето и се свързва със състояние и тенденции като компромис от изменения, докато резултатът е по-конкретен и засяга определен период. В този смисъл философията на успеха налага всеки конкретен резултат да бъде съпоставен с перспективата за развитие. Ако не е налице стратегия за развитие обаче, той се приема буквално и липсата на възможност за съотнасяне във времето го прави основен ориентир за развитието. За да е налице контролирано връщане назад, трябва да бъде даден ясен отговор на следните въпроси:

- Къде се намираме, т.е. каква е ситуацията в момента?
- Можем ли да влияем и с какво върху ситуацията в момента?
- В какво се изразява стратегическото ни поведение?

Отговор на първите два въпроса може и да определи и връщането назад като част от стратегическото поведение. Без това да стане, всяко връщане назад ще бъде хаотично и извън контрол. То трябва да бъде обвързано с определен стратегически дивидент.

Емблематични за новия вид опасност са обезпечените задължения по заем (CLO). Те обикновено се създават чрез синдикиране на заеми, обединяването им и след това разделението им на ценни книжа с различни рейтинги в зависимост от техните профили за плащане. Стойността на неизплатените CLO достигна около 850 млрд. долара, което ги прави най-големия секюритизиран кредитен сектор в САЩ. А високорисковите заеми с ливиридж формират нарастващия дял CLO, които частично се превръщат в активи от инвестиционен клас чрез алхимията на секюритизацията. Паралелите с ловките ипотечни ценни книжа от началото на века са очевидни. И все пак приликите също могат да бъдат надценени. Пазарът на CLO е около половината от размера на най-рисковия пазар на ипотечни ценни книжа CLO свързват инвеститорите с широк спектър от сектори не само с имоти. Те също така е вероятно да са дългосрочни инвестиции, по-устойчиви на възходи и падения на пазара. Балансите на домакинствата и бизнеса предимно са силни, а рисковете във финансовата система изглеждат управляеми. Освен това важен стабилизатор за финансовата система ще бъде относителната стабилност на

най-важния пазар на активи в САЩ –имотите. Силният скок в цените на жилищата през последните две години означава, че е вероятен спад в продажбите и стойностите. Но имотите са в драстичен недостиг. Сам Хатър от Freddie Mac , подкрепяна от правителството ипотечна компания , изчислява , че САЩ имат недостиг от близо 4 млн. жилища поради забавено строителство през последните 15 години. Далеч по-добре е финансовата система да влезе в рецесия с огромно изоставяне от недостатъчни инвестиции, отколкото с последствията от свръхинвестиции, какъвто беше случаят през 2007г.Механизъм за възстановяване и устойчивост. Регламентът за създаване на Механизъм за възстановяване и устойчивост беше приет от Съвета на 11 февруари 2021 г. Инструментът, който е в основата на Next Generation EU, осигурява подкрепа за държавите членки в размер на 672,5 милиарда евро, за да им помогне да се справят с икономическите и социалните последици от пандемията от COVID-19.На 13 юли 2021 г. първите 12 държави от ЕС: Австрия, Белгия, Германия, Гърция, Дания, Испания, Италия, Латвия, Люксембург, Португалия, Словакия и Франция получиха зелена светлина да използват средствата от ЕС за възстановяване и устойчивост за стимулиране на икономиките си и възстановяване от последиците от COVID-19.На 28 юли 2021 г. още четири държави от ЕС Кипър, Литва, Словения и Хърватия също получиха зелена светлина. На 8 септември 2021 г. Съветът прие решения за изпълнение относно одобряването на плановете за възстановяване и устойчивост на Чехия и Ирландия. На 5 октомври 2021 г. Съветът прие решения за изпълнение относно одобряването на плана за възстановяване и устойчивост на Малта. На 29 октомври 2021 г. три държави от ЕС – Естония, Финландия и Румъния – получиха зелена светлина, тъй като Съветът, след писмена процедура, прие решенията за изпълнение относно одобряването на техните плановете за възстановяване и устойчивост. На 3 май 2022 г. Съветът приветства оценката на националните плановете за възстановяване и устойчивост за още две държави – България и Швеция. На 17 юни 2022 г. Съветът прие решение за изпълнение относно одобряването на плана за възстановяване и устойчивост на Полша.

Изводи и заключения

Внедряването на нови технологии и инвестиции за подобряване на работата на банковата система. И използване на механизъм за възстановяване и устойчивост беше приет от Съвета на 11 февруари 2021 г. инструментът.

Контролното връщане назад – фактор за управленска устойчивост. Човешката психика е устроена така, че както в групов така и в личен аспект вниманието е насочено към успеха.

На 13 юли 2021 г. първите 12 държави от ЕС: Австрия, Белгия, Германия, Гърция, Дания, Испания, Италия, Латвия, Люксембург, Португалия, Словакия

и Франция получиха зелена светлина да използват средствата от ЕС за възстановяване и устойчивост за стимулиране на икономиките си и възстановяване от последиците от COVID-19.

Научната хипотеза потвърждава измененията в икономически основен световен план. Подвластни са и се изменят динамично и своевременно на война, инфлация и разбира се на непоследно място COVID-19 или друга биологична опасност.



ЮГОЗАПАДЕН
УНИВЕРСИТЕТ
„НЕОФИТ РИЛСКИ“



СТОПАНСКИ
ФАКУЛТЕТ

Прием
ОКС
„МАГИСТЪР“

Финанси



ЮГОЗАПАДЕН
УНИВЕРСИТЕТ
„НЕОФИТ РИЛСКИ“



СТОПАНСКИ
ФАКУЛТЕТ

Прием
ОКС
„МАГИСТЪР“

Счетоводно-
финансов
мениджмънт

NEOCLASSICAL THEORETICAL APPROACHES OF THE ROLE OF THE STATE ON ECONOMIC GROWTH

3 GALANIS IOANNIS⁸

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

The purpose of this paper is to examine the neoclassical theories that attempt to explain how the state can promote economic growth. The neoclassical school of economics relies on the principles of market efficiency and incentives, which prioritize limited government intervention and market-based policies. As a result, three distinct perspectives arise from this theoretical approach. The perspective of the minimalist state emphasizes the importance of the state having a limited role in the economy. Instead, it concentrates on establishing a steady legal and institutional foundation that safeguards property rights and guarantees the rule of law. Furthermore, the state is required to intervene in areas where market failures may impede the provision of public goods or externalities. Lastly, the creation of a fitting institutional structure, along with the implementation of policies that support the market, is deemed essential for enabling economic growth. Despite the criticisms directed towards neoclassical approaches, they offer crucial perspectives on how the state and economic growth are intertwined, providing policymakers with useful advice on how government intervention can facilitate sustainable economic development while recognizing its limitations.

Keywords: *Economic Growth, Neoclassical Economics, Role of State*

JEL Codes: *B12, B22, B50*

Introduction

When it comes to the state's influence on economic growth, neoclassical theory tends to prioritize market-oriented policies and minimal government intervention. This stance is based on the neoclassical economics framework, which stresses the significance of market efficiency and incentives in shaping economic activities. There are three primary neoclassical viewpoints regarding the state's role in economic growth:

The Minimalist State perspective advocates for a restricted involvement of the government in economics. The government must concentrate on establishing a consistent, institutional and legal structure that safeguards property rights, enforces contracts, and applies the law impartially. Its role is to create an environment that is suitable for market activities and private sector investments, both of which are viewed as the primary stimulants of economic development. This viewpoint is often linked with laissez-faire economics and recommends a minimal amount of government

⁸ PhD candidate at Faculty of Economics, SWU "Neofit Rilski", Blagoevgrad.

intervention in economic issues (Screpanti & Zamagni, 1993). Through another neoclassical approach, it is acknowledged that there are specific domains in which markets may not be able to generate optimal outcomes. These areas include the distribution of public goods like education, infrastructure, and defense, the management of externalities such as pollution, as well as the handling of information asymmetries. Within this framework, the role of the government is to correct these market failures by providing public goods and services that are crucial for economic advancement but are not adequately provided by the private sector. Nevertheless, the government must limit its intervention to address market failures and adhere to principles of efficiency and cost-effectiveness.

The significance of an appropriate institutional framework and market-friendly policies in encouraging economic growth is highlighted by neoclassical theorists. This viewpoint asserts that it is essential for the state to concentrate on developing and sustaining institutions that encourage competition, guarantee contract enforcement, protect property rights, and ensure that all businesses have a level playing field. Apart from this, the state can also aid in implementing policies that support macroeconomic stability, such as responsible fiscal and monetary policies. By creating a favorable institutional environment and adopting policies that are market-oriented, the government can promote growth led by the private sector and encourage a flourishing and efficient economy (Stiglitz, 1989).

The Neoclassic Literature for the State and the Growth

In comparison to the classical period, the neoclassical era is distinguished by the abandonment of the pursuit of general theories regarding the operation and evolution of the economic system. Instead, the focus has shifted towards microeconomic figures and the analysis of short-term data. As a result, the issues of economic growth and development have been relegated to a secondary role or disregarded altogether. The term "neoclassical economics" was created by Thorstein Veblen (Veblen, 1900) to describe the financial analysis methodology of Alfred Marshall (Marshall, 1890; Fry, 1976), which he characterized as a fusion of the marginalist theories of Carl Menger (1840-1921) and William Jevons (1835-1882) with the analysis of classical economists (Colander 2000:131).

If any external force were to intervene in the competitive market and restrict the freedom of consumers and businesses, it would result in economic instability by deviating from the optimal distribution of production means and reducing social welfare. The state, which should remain neutral, is one such external force. It should only intervene in cases where the ideal model of perfect competition in the market is not guaranteed.

The contributions of neoclassical theory continue to hold significance in modern times and remain a fundamental aspect of the economics curriculum. Their primary focus pertained to the theory of utility and the marginal approach of

economic phenomena (Cole, 1961), which was expounded upon by W.S. Jevons (1878). Additionally, their contributions to the theory of general equilibrium by C. Walras (1954), the theory of indifference curves by V. Pareto (Schumpeter, 1949), the theory of domestic productivity and product distribution by P.H. Wicksteed (1889; 1933), and the welfare function by A.C. Pigou (1943; 1947) were crucial. The main focus of neoclassicists is on efficiently allocating the available resources to meet the demands and needs of consumers, rather than taking into account the social and political factors that may influence them.

The neoclassical perspective posits that humans are driven by hedonistic desires to attain self-fulfillment through leisure and consumption. The essential tenets of neoclassical political economy theory are centered around maximizing profits while minimizing costs, maximizing utilization while minimizing dissatisfaction. In light of this, a favorable society should produce goods that are in high demand by consumers while keeping costs as low as possible and maximizing the use of available resources. Moreover, this society must guarantee economic stability, freedom, and security while avoiding both recession and inflation.

The main contention of his argument was that every economy has the capability to regulate the forces of supply and demand without any interference from the government. He believed that this independent process ultimately results in a resource allocation that is both efficient and effective. This means that any economic fluctuations will be corrected by market forces, leading to the emergence of a new equilibrium. Thus, any government intervention aimed at resolving these distortions will only exacerbate the instability in the economy. Additionally, they propose that a balanced state budget is necessary as the financing of expenditures through deficits will have the effect of creating distortions (Khan et al., 2011).

Adam Smith's opposition to commercialism, David Ricardo's application of comparative advantage principles in analyzing international trade, and Heckscher's elaboration formed the foundation for theories on international economic issues. In the international arena, free trade between countries is favored over trade restrictions. The main feature of the new visa is not its extent, but its economic role in combination with the pursuit of social welfare and the feasibility of purchasing the system. The limits of this role are reached when state intervention becomes detrimental to the economy. Additionally, a traditional and pragmatic view of liberalism serves as the theoretical basis of public economy.

In contemporary Political Economy, "Public Economy" has emerged as a distinct entity that redefines the role of the state to that of a manager. The state assumes responsibilities within an economic framework that is rooted in the free market, with the explicit goal of enhancing the welfare of society. The crux of the issue is the nature and scope of these responsibilities, which must be designed to supplement and support the private economy. Within a liberal framework, the economy is deemed to be a mixed system, where both the public and private sectors

coexist and their respective roles are determined on a utilitarian basis. The market, being the natural terrain of the private sector, is considered the most effective system and is therefore given priority over alternative modes of production and distribution.

Liberalism rejects any notion of state action that divides society into oppressing and oppressed classes, regardless of whether the ruling class is made up of media owners of production, as Marxist theory posits, or the party elite of a majority with similar beliefs. The primary role of the state, as envisioned by liberalism, is to protect individual freedom and action. Under this framework, it matters little who holds power, as long as the citizens have the right to dismiss unsuitable rulers. However, within a liberal state, social rights are intrinsically tied to state interventionism. This occurs when the state takes corrective measures to improve the living conditions of society's members.

Critique on the Neoclassic Approaches on State and Growth

The following section takes a critical look at the criticisms levelled against neoclassical theoretical approaches regarding the role of the state in driving economic growth. It emphasizes the importance of alternative perspectives in highlighting concerns and the need for a more nuanced understanding of the intricate connection between the state and economic development (Colander, 2000).

A major criticism of neoclassical approaches is their insufficiency in addressing market failures and the necessity for public goods supply. Advocates of neoclassical theory frequently promote limited state involvement, contending that markets allocate resources efficiently. However, this view disregards situations in which markets do not furnish certain goods and services that are critical for the advancement of the economy. Public goods, including education, infrastructure, and healthcare, often experience inadequate investment in systems that are solely market-based.

The neoclassical viewpoint tends to prioritize efficiency and economic expansion without giving due attention to equity and social welfare. Opponents assert that unrestricted markets can worsen inequality, resulting in the concentration of wealth and power in the hands of a select few. This, in turn, can impede economic growth by decreasing social mobility, stifling innovation, and undermining social unity. Additionally, the assumption of rational behavior in the neoclassical theory may not accurately capture the intricacies of decision-making. This is due to the presence of cognitive biases, limited information, and bounded rationality, which cause individuals and firms to deviate from perfect rationality.

Critics of neoclassical models highlight the unrealistic suppositions that underlie them. One of the most prominent is the notion of perfect competition, which may not be an accurate reflection of various industries characterized by monopolies, oligopolies, or limited information. Additionally, the concept of rational expectations ignores the existence of uncertainty and imperfect knowledge in economic decision-making. In reality, people and businesses contend with information asymmetries, behavioral biases, and unforeseeable occurrences that can significantly influence

economic outcomes. By overlooking these complexities, the scope and durability of neoclassical theoretical methodologies is limited.

Gaining a complete comprehension of the role that the state plays in the economy's growth is of utmost importance. In order to achieve this, it is necessary to amalgamate the perspectives of different schools of thought. The neoclassical approach is helpful in providing valuable observations regarding market efficiency and the significance of incentives in propelling economic behavior forward. Nevertheless, these insights must be augmented with the acknowledgement of the existence of market failures, the necessity for the provisioning of public goods, and the impact of institutions on shaping economic outcomes. To best serve their constituents, policymakers ought to take a practical standpoint and acknowledge that the most effective role of the state can differ depending on the circumstances and industries. This necessitates an approach founded on evidence that scrutinizes the particular deficiencies in the market, externalities, and institutional shortcomings that may necessitate government intervention. Moreover, policymakers must put the advancement of inclusive growth at the forefront of their priorities, guaranteeing that economic progress benefits all sections of society and diminishes inequality.

Conclusion and Recommendations

The criticisms levied against neoclassical theoretical approaches regarding the role of the state in economic growth bring to light the inadequacies of a solely market-oriented viewpoint. While neoclassical economics does provide some useful insights, it fails to address issues such as market failures, inequality, and the intricacies of actual economic systems. Alternative perspectives, such as Keynesian economics and institutional economics, present a more comprehensive comprehension of the state's role and the significance of countercyclical policies, social welfare, and the development of institutions.

In order to expand our comprehension, it is imperative that we unite observations from various theoretical standpoints and take a practical stance towards creating policies. This will enable us to construct more resilient and efficient tactics for encouraging sustainable economic progress that factors in the multifaceted and constantly evolving realities of contemporary economies.

REFERENCES

- Colander, D. (2000). The death of neoclassical economics. *Journal of the history of Economic Thought*, 22(2), 127-143.
- Cole, Donald Preston, "Jevonian value theory: A preface to marginal utility analysis" (1961). Graduate Student Theses, Dissertations, & Professional Papers. 5609. <https://scholarworks.umt.edu/etd/5609>.
- Fry, G. K. (1976). The Marshallian School and the role of the state. *Bulletin of Economic Research*, 28(1), 23-35.
- Jevons, William Stanley (1878). *Political Economy*. Science Primers. New York: D. Appleton and Co.

- Khan, Mohd Saeed, Aziz and Ghazala (2011). [online] Available at: https://www.researchgate.net/publication/272173080_Neoclassical_Versus_Keynesian_Approach_to_Public_Policy_-_The_Need_for_Synthesis [Accessed 4 June 2021].
- Marshall, A. (1890). *Principles of Economics*, 8th edn (1920). London, Mcmillan.
- Pigou, A.C. (1943), The classical stationary state., *The Economic Journal*, Vol.53, No. 212 (Dec., 1943), pp. 343-351.
- Pigou, A.C., (1947), Economic Progress in a stable environment, *Economica*, New Series, Vol. 14, No. 55 (Aug., 1947), pp. 180-188.
- Screpanti, E., & Zamagni, S. (1993). *An Outline of the History of Economic. Thought*. Oxford: Clarendon.
- Schumpeter, J. A. (1949). Vilfredo Pareto (1848–1923). *The Quarterly Journal of Economics*, 63(2), 147-173.
- Stiglitz, J. E. (1989). *The economic role of the state*. Wiley-Blackwell.
- Walras, L. (1954) *Elements of Pure Economics*. Translated by Jaffe, W., Allen and Unwin, London.
- Wicksteed, P. (1889). On certain passages in Jevons’ ‘Theory of political economy’., *Quarterly Journal of Economics*, 3:193-314.
- Wicksteed, P. H. (1933). *The Common Sense of Political Economy*. In vol. 2 of *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, edited by Lionel Robbins. London: George Routledge & Sons

PUBLIC EXPENDITURE AND ECONOMIC GROWTH: THE CASE OF ADOLPH WAGNER'S LAW

4 GALANIS IOANNIS⁹

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

The focus of this paper is to investigate the connection between public expenditure and economic growth, with a particular emphasis on Adolph Wagner's law. According to the law, there is a positive correlation between the level of economic development and the size and growth of public expenditure in an economy. This study critically examines the applicability and implications of Wagner's Law in various economic contexts by analyzing empirical studies and theoretical perspectives. It also explores the factors that have the potential to impact the observed relationship, such as population growth, industrialization, urbanization, technological advancements, and social welfare policies. By acknowledging the intricacies and subtleties of this relationship, this study provides insights for policymakers who are looking to maintain a balance between public investment and fiscal sustainability while contributing to the ongoing debate surrounding the impact of public expenditure on economic growth.

Keywords: *Economic Growth, Wagner's Law, Public Expenditure*

JEL Codes: *P16, H72, H5*

Introduction

The empirical law of Adolph Wagner (Wagner, 1958) was developed to investigate his belief that there is a causal connection between economic expansion and government expenditure. According to his "Law of Increasing State Activity" theory, when advanced nations experience a rise in per capita income and output, their public spending must also increase in proportion to overall economic activity. Wagner noticed that public spending increases were also relative to the national product, based on statistical data from various European countries on the evolution of public sector spending and national product. Therefore, he proposed the hypothesis that economic growth and an increase in living standards would result in an expansion of the public sector. This implies that the majority of productive resources will be overseen by the public sector (Georgakopoulos & Patsouratis, 1995). Wagner posits that during times of economic growth, public spending as a percentage of GDP increases while private sector spending decreases. This leads to an increase in income

⁹ PhD candidate at Faculty of Economics, SWU "Neofit Rilski", Blagoevgrad.

per household and a corresponding rise in both private and public demand. The elasticity of demand for aggregate goods in relation to income is expected to be equal to one. As public expenditure as a percentage of GDP increases over time, the income elasticity of demand for public goods is also expected to increase, while the demand for luxury goods decreases. In effect, the demand for public goods becomes similar to that of luxury goods, with higher income leading to a higher demand for both, after basic needs have been met.

The Literature on the Law of Adolph Wagner

As per capita income increases, it is inevitable that consumer behavior will be affected. This means that certain types of public spending will grow at a faster rate than the national product's corresponding growth rate due to the increase in per capita income. This scenario is applicable to specific public consumption expenditures that provide goods or services to society without charge, which are not intended to meet basic needs but rather cultural ones such as entertainment and travel. As a result, the income elasticity of demand is greater than one. In other words, when demand is higher than one, the public sector must increase expenditures to supply society at a faster rate than the national income growth rate to meet the growing demand.

Urbanization is a contributing factor to the expansion of public expenditure. The need for infrastructure projects such as water supply, sewage, electricity, transportation, road maintenance, schools and colleges, traffic control, public health, parks and libraries, playgrounds, and more has grown due to the increase in demand caused by urbanization. States are pressured to take on a more significant role and increase their administrative spending. Wagner believed that social progress was the main force behind the growth of government during the industrial era. The progression of society leads to an increase in government involvement, which, in turn, boosts government economic activity both in absolute terms and proportionally.

One of the fundamental factors accountable for this evolution is the effective implementation of industrialization. Advancements in technology, as well as improvements in production and distribution systems, not only serve as preconditions but also result from progress in economic and social growth. However, these technological and organizational changes typically lead to an increase in government expenditure as a result of the upgrade of equipment.

The perception of society regarding the role of the state has undergone a significant shift. In the 19th century, the state was often viewed as a "police state," but it has since evolved into what is now commonly referred to as a "welfare state." The state has taken on a more expansive and crucial role, assuming responsibility for needs that were previously seen as the responsibility of individuals. This transformation may offer insight into the growing tendency towards increased public expenditures.

One potential explanation for the rise in public spending is the emergence of new resources for financing such expenditures. Additionally, it is worth considering

the long-term advancements in the means of public expenditure financing as a contributing factor. As a country experiences faster economic growth, it tends to see a corresponding increase in the rate of funding for public expenditures. This is due in part to the accumulation of taxes with greater income flexibility, which outpaces the growth of taxes with lower income flexibility.

One noteworthy point is that public goods require a greater amount of investment in production than private goods. The manufacturing expenses associated with public goods are a crucial factor that could drive the growth of that sector. In contrast to the manufacturing expenses of private goods, the costs of producing public goods are rapidly increasing over time.

The reason for this is that certain government services, such as healthcare and education, demand a significant amount of labor due to the public sector's productivity growth being lower, resulting from technical advancements, compared to the private sector's growth in this area.

The function of government and the extent of government spending has been studied in financial literature from a multitude of perspectives. The presence of an optimal level of government expenditure has been a significant topic of discussion in both theoretical and empirical research. The bibliography offers several potential explanations for the varying sizes of governments across different nations.

The focus of these studies is typically centered around different economic factors that are also given consideration. Among the primary ones are the degree of economic development (Easterly and Rebelo, 1993), the size of the country (Alesina and Wacziarg, 1998), business cycle variability (Fatas and Mihov, 2001), political organization (Persson and Tabellini, 1999), and the impact of international trade (Rodrik, 1998).

When assessing the relationship between the growth rate of government and economic growth, there has been a tendency to approach the matter with a degree of prudence. Specifically, a considerable amount of research has been conducted on the enduring correlation between government expenditure and economic growth. This inquiry is a classic topic of discourse in the realm of classical economics, a school of thought that argues that heightened government spending is deleterious to economic growth, and that government intervention should be restricted to a minimum.

Adolph Wagner formulated the concept of the "rule of rising expansion of the public sector and government operations" in 1893, within this context.

The expansion of government activities is often due to the provision of specific services such as public administration, justice, public safety, education, healthcare, and more. These services typically increase in demand with population growth and urbanization. This phenomenon is referred to as "Wagner's Law" in economic literature and assumes that not only does the size of the public sector alter with economic growth, but there is also a causal link between the growth of the private sector and the growth of the economy.

In summary, Wagner's Law states that as an economy grows, the public sector's activity relative to the private sector's activity increases.

In general, the public sector's behavior can be attributed to several factors: the need to provide more administrative and security services due to population growth and urbanization, increased social welfare costs, and the need for public intervention in regulating monopolies. Across the major industrialized nations of Western Europe, North America, and certain Asian countries, government spending has increased at a rate higher than the growth of GDP per capita. This trend has a significant impact on the structure of advanced economies, affecting employment, private businesses' adherence to government regulations, and the distribution of personal income. Additionally, government spending is becoming increasingly reliant on transfers and taxes for funding.

Wagner identifies the primary factors that impact fiscal costs, which include: As a result of economic development and the subsequent rise in per capita income, citizens tend to demand better infrastructures, stronger social safety nets for the most vulnerable, and superior cultural goods and services.

As economic growth spurs urbanization and industrialization, the public sector will experience more rapid expansion than the private sector. This is due to the creation of new costs for central administration as a result of these developments. An expanding economy disrupts existing legal and administrative balances, resulting in increased complexity and a greater need for the government to play an administrative, regulatory, and protective role. This, in turn, leads to additional public costs.

According to Bird (1971), government intervention in the market serves a dual purpose - to prevent the formation of physical monopolies and to ensure a more efficient distribution of production resources.

Wagner posited the notion that certain services could not be provided in a proficient manner by private entities. The magnitude of their usefulness or the ramifications of not providing them means that they must inevitably be absorbed by the public sector. He further declared that the process of continual industrialization, which is an integral facet of an economy based on growth, necessitates the accumulation of resources as well as greater investment capital. Managing these resources is more convenient under the auspices of the public sector as opposed to the private sector. Lastly, Wagner contended that natural monopolies should be established and governed by the state apparatus, as this enhances economic efficiency (Jaen Garcia, 2011).

It is evident from the above that there exists a causal relationship between economic development and Public Expenditure, as seen in Wagner's theory. However, due to the considerable differences between the economies of various countries and the absence of a mathematical formulation of this particular theory by Wagner himself, the Law of Wagner has been formulated and elaborated upon by different researchers. Most of these models operate under the assumption that the elasticity of fiscal revenues in relation to fiscal expenditures exceeds unity. This is the only scenario in which the magnitudes of the two are related, coinciding with

Wagner's Law. The cyclic nature of public spending in OECD countries has also been associated with political and economic factors, with government salaries being particularly affected by these variables (Lane, 2003).

Critique on the Law of Adolph Wagner

The objective of this segment is to critically evaluate Wagner's Law by analyzing its drawbacks and investigating other viewpoints regarding the correlation between public spending and economic progress. Wagner's Law is often criticized for its lack of clarity surrounding causality and endogeneity. The law assumes a linear relationship, where economic progress is the cause of heightened public expenditure. That being said, it is plausible that the relationship is bi-directional, with public expenditure also having an impact on economic growth. As a result, economic growth can result in greater tax revenues, which can be used by governments to boost public expenditure. This creates a challenge when attempting to determine a clear causal direction between economic development and public expenditure.

The Law of Wagner proposes that there is a connection between the growth of public expenditures and the expansion of economic development that is global in nature. Nevertheless, various empirical studies indicate that there are notable differences in this relationship between various countries. Some countries with advanced levels of economic development have relatively lower levels of public expenditure in relation to their gross domestic product (GDP), while other countries with lower levels of economic development have higher levels of public expenditure. This discrepancy can be explained by variations in political structures, institutional excellence, fiscal responsibility, and the quality of governance.

Wagner's Law suggests that economic development requires an increase in public expenditure. However, it fails to account for the efficacy and efficiency of government spending. Inefficient and excessive public expenditure can result in the squandering of resources, discourage private investment, and impose public debt upon future generations. Therefore, it is imperative to not only consider the magnitude of public expenditure but also its effectiveness and productivity.

Conclusion and Recommendations

While Adolf Wagner's Law provides insight into the relationship between public spending and economic growth, it is important to recognize its limitations and consider other perspectives. Critics of Wagner's Law emphasize the challenges of establishing causality, heterogeneity across countries, the efficiency of public spending, and the need to account for structural change and technological progress. Alternative perspectives, such as endogenous growth theory add an emphasis on fiscal discipline, provide policymakers with valuable insights. Ultimately, the relationship between public expenditure and economic growth is complex and multifaceted, requiring careful analysis of country context, institutional factors, and the quality of public expenditure to achieve sustainable and inclusive economic development.

REFERENCES

- Γεωργακόπουλος, Θ., & Πατσουράτης, Β. (1995). Δημόσια Οικονομική. Εκδοτικές Επιχειρήσεις το οικονομικό, Αθήνα (in Greek).
- Wagner, A. (1958). Three Extracts on Public Finance, translated and reprinted in RA Musgrave and AT Peacock (eds), Classics in the Theory of Public Finance.
- Bird R.M. (1971). Wagner's Law of expanding state activity., Public Finance Vol. 26 pp. 1 - 26.
- Rodrik D. (1998). Why do more open economies have bigger governments?., Journal of Political Economy Vol. 106 pp 997 - 1032.
- Alesina, A., & Wacziarg, R. (1998). Openness, country size and government. Journal of Public Economics, 69(3), 305-321.
- Easterly, W. and Rebelo, S. (1993). Fiscal policy and economic growth: An empirical investigation. Journal of Monetary Economics 32(3), 417-458.
- Persson T. and Tabellini G. (1999) The size and scope of government: comparative politics with rational politicians., European Economic Review Vol. 63 pp. 699 - 735.
- Fatas A. and Mihov I. (2001). Government size and automatic stabilizers: international and intranational evidence., Journal of International Economics Vol. 55 pp. 3 - 28.
- Jaen-Garcia, M. (2011). Empirical analysis of Wagner's law for the Spain's regions. International Journal of Academic Research in Accounting, Finance and Management Sciences, 1(1), 1-17.
- Lane P.R. (2003). The cyclical behavior of fiscal policy: evidence from the OECD., Journal of Public Economics Vol. 87 pp. 2661 - 2675. Stiglitz, J. E. (1989). The economic role of the state. Wiley-Blackwell.

TAX HARMONIZATION POLICY AND MACROECONOMIC CHALLENGES IN A CHANGING EUROPEAN UNION *

Afroditi Charisi¹⁰

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

With the European Union (EU) poised to confront major macroeconomic challenges, tax harmonization policy has emerged as a pressing matter. Our objective is to comprehend the prospective advantages and hindrances of harmonizing taxes amongst member states, considering the varied economic circumstances and fiscal agendas within the EU. Our analysis showcases that, while tax harmonization can foster fairness, impede tax base erosion, and refine economic integration, it also confronts sizable macroeconomic obstacles. The obstacles to achieving effective tax harmonization in the European Union are numerous and complex. One such challenge is finding a way to balance fiscal autonomy with harmonization efforts. Another is addressing economic inequalities between member states, while simultaneously mitigating the risk of tax competition. This research serves to enhance our comprehension of tax harmonization policy in the EU and underscores the importance of taking macroeconomic factors into account when crafting effective harmonization strategies.

Keywords: Tax Harmonization, EU Fiscal Policy, Macroeconomic Factors

JEL Codes: E62, H21, H71, K34

1. Introduction: Definition of tax harmonization in the European Union

The European Union (EU) has been striving for greater integration and cohesion among its member states. One area of focus in this pursuit is tax harmonization, which aims to create a unified framework for taxation across the EU. However, implementing tax harmonization policies in a changing European Union presents significant macroeconomic challenges. The process of aligning tax policies and regulations among different countries or regions is referred to as tax harmonization. In the case of the EU, tax harmonization aims to create a common taxation framework that ensures equal opportunities for businesses and individuals across member states. Its objective is to minimize tax distortions, prevent harmful tax competition, and enhance economic integration within the EU.

The debate surrounding tax harmonization continues to be a source of disagreement in both political and academic realms, both within and outside of the European Union. Numerous scholars have extensively deliberated on the benefits of harmonization, with some suggesting that the European Court of Justice is the most effective method for achieving this goal, while others argue that the complex tax laws of the WEU make it an unfeasible task. Meanwhile, various political entities have alternately advocated for, declined, suggested, and dismissed attempts at achieving tax harmonization.

¹⁰ PhD candidate at Faculty of Economics, SWU “Neofit Rilski”, Blagoevgrad.

The focus of tax harmonization efforts at the EU level has been primarily on the legislation of indirect taxes (such as VAT, excise duties on energy products, electricity, alcohol, and tobacco) related to goods and services, while direct taxes on income and profits have not received as much attention.

The term "tax harmonization" is utilized in a non-standard manner by both the academic and political communities. Due to the controversial nature of the term, it presents an opportunity for political actors to differentiate its meaning. There are three distinct categories in which the term "harmonization" is used: 'unification', 'approach' or 'convergence', 'coordination' (Kiegebeld, 2004; Bearer-Friend, 2012). The most expansive concept is 'unification', which is deemed politically unattainable, as it would necessitate complete uniformity in tax legislation across all Member States. The "approach" is the most restrictive interpretation of harmonization, based on the guidelines of Rule 94 (European Parliament). In this sense, tax harmonization is attained through directives only at the Community level for specific segments of the integrated market.

Due to the considerable influence that tax systems have on various aspects of the macroeconomy, it is imperative to examine the tax systems of member states. This involves documenting and analyzing the variations and similarities among specific groups within the union that have comparable or shared tax models. Over the past ten years, research literature (Kautto, 2002; Ferreira et al., 2005; Fenger, 2007; Draxler et al., 2010) has expanded with the inclusion of empirical studies that use social indicators to classify countries according to distinct social and welfare models.

Simultaneously, the creation of particular social structures is heavily influenced by the tax frameworks adopted by a nation and the level of economic advancement it has attained (Krugman et al., 2001). Those countries that possess substantial welfare systems are typically those that have enjoyed prosperity over extended periods.

2. Conditions for taxation harmonization in the context of tax systems of the EU member states

Andrejovská & Hudáková (2016) categorized the member states of the European Union into five distinct groups based on shared characteristics such as the corporate income tax rate, economic performance, and the level of public debt. This classification emphasizes the differences in economic development and policies among member states, despite their integration. Alena et al., (2017) conducted a study that focused on corporate income tax in the EU and identified five groups of countries with similarities in business taxation and the assessment of the level of corporate taxation. Another factor that seems to influence the categorization of EU countries into groups with similar tax systems is the level of participation in the process of globalization, which includes economic barriers, current flows, and social and political indicators ((Luković, 2015). These studies have revealed the existence of tax competition among EU countries (Remeur, 2015). It also confirms the fact that European convergence is a long- term process (Jochimsen & Lehmann, 2017), as

fiscal convergence can be achieved mainly through state tax reforms which member states find difficult to adopt.

Tanchev et al. (2019) support the following views: a) A balanced budget can be considered sustainable in the long run only if higher economic growth leads to higher government revenue b) To achieve financial sustainability, a progressive income tax should be introduced and the income ceiling for social security contributions should be increased c) VAT is a major factor in total government revenue, which means that the revenue component of the government budget is not properly structured.

Stoilova and Patonov (2020) support the following conclusions: a) taxation is a more appropriate financial policy tool than public spending b) when domestic supply is weak, government spending cannot stimulate domestic production because the supply is mainly imported goods c) public investment has a negative impact on economic growth, indicating that capital spending is unproductive d) a very important factor is the level of corruption, which correlates strongly with government investment but reduces its effectiveness e) the value-added tax revenue showed a growth trend f) lower corporate tax rates have a positive effect on economic output over the analysis period, while personal income taxes show a negative effect g) there is no significant relationship between property tax and economic growth in Bulgaria.

Nerudová (2011) states that companies face 27 different corporate taxation regimes, which affects their competitiveness because it does not allow full enjoyment of the benefits associated with the internal market. This led the European Commission to attempt to introduce a common corporate tax regime under the Common Harmonized Corporate Tax Base (CCCTB). Solilová and Nerudová (2018) in their published article argue that the common (consolidated) tax base for companies represents one of the most ambitious projects in the history of corporate taxation in the European Union. Herzig and Kuhr (2011) presented the common rules for determining the tax base, but also the stages of consolidation and subsequent allocation of the type.

The European Union's evolving landscape presents significant macroeconomic challenge:

The European Union is comprised of member nations with a range of economic structures, developmental stages, and taxation systems. The task of achieving tax harmonization among these diverse countries necessitates a balance between their distinctive needs and interests. The challenge is to find an equitable middle ground that accommodates the unique economic circumstances of each member state while also ensuring fairness and equal treatment.

The concept of taxation is inherently intertwined with the notions of national sovereignty and the dynamics of domestic politics. The autonomy of each member state with regard to its fiscal policies is fiercely protected, leading to obstacles in reaching agreements on tax harmonization policies. The task at hand is to find a

middle ground that balances the need for a cohesive tax system while also acknowledging and preserving the unique sovereignty of each individual country.

One of the challenges faced by the EU is the economic inequalities that exist between its member states, including disparities in both living standards and GDP per capita. It is important to note that any effort towards tax harmonization must be approached with caution, as it may inadvertently worsen these disparities if not implemented in a thoughtful manner. Striving for both cohesion and convergence while taking into account the potential consequence on less developed regions is a major obstacle that must be navigated with care.

When implementing tax harmonization policies, member states may face challenges with transition costs as they adjust to new regulations and rules. Furthermore, discrepancies in tax rates and revenue-sharing mechanisms can result in redistribution effects. These challenges can be overcome with proper planning and coordination to ensure an efficient and seamless transition without unfairly burdening specific regions or countries.

3. Objectives and Benefits of Tax Harmonization:

Objectives of tax harmonisation

The Commission's objectives for tax harmonization are communicated to the public through official announcements. One of the most significant announcements is the "Tax policy in the European Union: Priorities for years" communication from 2001.

This communication acknowledges that tax policies must be consistent with the EU's overarching policies and outlines five overarching goals that would be furthered by enhancing tax harmonization. Tax harmonisation can ensure equal opportunities for all EU Member States to compete and reap the full benefits of the internal market is crucial to sustaining its success and development. Moreover, can maintain a balance between reducing taxes, investing in public services, and maintaining fiscal consolidation, can contribute to reducing the overall tax burden in the EU. The policies aim to reinforce various aspects such as the economy, employment, innovation, health and consumer protection, sustainable development, and environmental and energy policies. Assisting in the modernization of the European Social Model is a crucial aspect of Tax harmonisation.

In 2006, a communication titled "Coordination of Member States' direct taxation systems" outlined three main objectives for tax harmonisation, which are the elimination of discrimination and double taxation, prevention of unintentional non-taxation and abuse, and reduction of compliance costs for those who are subject to multiple tax systems.

Benefits of Tax Harmonization

The harmonization of tax policies can result in increased economic efficiency by diminishing the cost of compliance and reducing administrative burdens for businesses that operate in numerous countries. When tax regulations and procedures are simplified, it allows for smooth cross-border trade and investment, ultimately promoting economic growth and competitiveness within the EU.

The establishment of common tax regulations through harmonization can help to prevent a scenario known as the "race to the bottom." This is where countries engage in aggressive tax competition to attract businesses and investments. Harmonization helps to ensure fair competition among member states by preventing harmful tax practices and maintaining an equitable playing field.

One benefit of harmonization is the potential for increased revenue collection. By minimizing opportunities for tax evasion and avoidance, coordinated efforts to combat tax fraud and promote transparency throughout the European Union can result in a more effective distribution of resources and a more equitable sharing of the tax burden.

4. Conclusion and Recommendations

When considering tax harmonization policies in the context of a changing European Union, there are both benefits and obstacles to be addressed. On the one hand, harmonization can lead to economic efficiency, fair competition, and more effective revenue collection. However, it is crucial to approach harmonization with caution due to the diverse economic structures, political dynamics, economic disparities, and transition costs present in the EU.

To overcome these challenges, policymakers must prioritize the following recommendations: first, a flexible and differentiated approach that recognizes the unique circumstances and needs of each member state, thereby striking a balance between convergence and national sovereignty. Second, there must be a comprehensive dialogue and consensus-building process among member states, policymakers, and relevant stakeholders to ensure effective and equitable implementation of tax harmonization policies. The act of engaging in constructive and open discussions can play a pivotal role in identifying common goals, addressing concerns, and building trust. The collaborative approach taken is crucial in ensuring that tax harmonization policies benefit all member states and contribute to the overall stability and growth of the European Union. To implement tax harmonization policies gradually, it is important to provide member states with sufficient time to adjust and adapt. Additionally, transition support mechanisms can help alleviate potential negative impacts, particularly for less developed regions.

To evaluate the effectiveness and impact of tax harmonization policies, it is necessary to establish robust monitoring and evaluation mechanisms. Regular assessments can help identify any unintended consequences, disparities, or areas requiring adjustments. Furthermore, sharing best practices and experiences among member states can facilitate continuous improvement and learning. The European Union can successfully address the macroeconomic challenges linked to tax harmonization and establish a balanced and harmonized tax framework, promoting economic integration, fair competition, and sustainable growth in a rapidly evolving European Union, by adhering to these recommendations.

REFERENCES

Alena, A., Lucia, M., & Slavomíra, M. (2017). Meta-analysis categorization of EU countries in the context of corporate income tax. *Contaduría y administración*, 62(3), 1001-1018.

Andrejovská, A., & Hudáková, M. (2016). Classification of EU countries in the context of corporate income tax. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 64(5), 1699-1708.

Baldwin, R., & Krugman, P. (2001). *Agglomeration, Integration and Tax Harmonization*, The Graduate Institute of International Studies. IHEID Working Papers 01-2001, Geneva.

Bearer-Friend, J. (2012). A new path towards tax harmonization in the European Union: A prospective analysis of the foreign accounts tax compliance act's effect on EU tax policy.

Draxler, J., & Van Vliet, O. (2010). European social model: No convergence from the East. *European Integration*, 32(1), 115-135.

Fenger, M. (2007). Welfare regimes in Central and Eastern Europe: Incorporating post-communist countries in a welfare regime typology. *Contemporary issues and ideas in social sciences*, 3(2), 1-30.

Ferreira, L. V., & Figueiredo, A. (2005). *Welfare Regimes in the UE 15 and in the Enlarged Europe-an Exploratory Analysis*.

Ferreiro, J., García-del-Valle, M. T., & Gómez, C. (2013). An Analysis of the Convergence of the Composition of Public Expenditures in European Union Countries. *American Journal of Economics and sociology*, 72(4), 799-825.

Jochimsen, B., & Lehmann, R. (2017). On the political economy of national tax revenue forecasts: evidence from OECD countries. *Public Choice*, 170(3-4), 211-230.

Kautto, M. (2002). Investing in services in West European welfare states. *Journal of European Social Policy*, 12(1), 53-65.

Kiekebeld, J. B. (2004). *Harmful Tax Competition in the European Union: Code of Conduct. Countermeasures and EU Law*, Rotterdam, Foundation for European Fiscal Studies, Erasmus University.

Luković, S. (2015). The impact of globalization on the characteristics of European countries' tax systems. *Economic Annals*, 60(206), 117-139.

Petrova, K. (2014). Significance of Public Expenditure for the Formation of Separate Models of Socio-economic Development in the European Union. *Ikonomiceski i Sotsialni Alternativi*, (1), 58-71.

Remeur, C. (2015). *Tax policy in the EU-Issues and challenges*. EPRS: European Parliamentary Research Service. Belgium. Retrieved from

<https://policycommons.net/artifacts/1336593/tax-policy-in-the-eu/1943893/> on 27 May 2023. CID: 20.500.12592/7432m6.

Tanchev, S., & Todorov, I. (2019). Tax buoyancy and economic growth: Empirical evidence of Bulgaria. *Journal of Tax Reform*, 5(3), 236-248.

Stoilova, D., & Patonov, N. (2020). Fiscal policy and growth in a small emerging economy: The case of Bulgaria. *Society and Economy*, 42(4), 386-402.

Nerudová, D., & Solilová, V. (2014). Missing Data and its Impact on the CCCTB Determination. *Procedia economics and finance*, 12, 462-471.

Herzig, N., & Kuhr, J. (2011). Direct taxation in the EU: the common corporate tax base as the next sub-step towards harmonization. *Wroclaw Review of Law, Administration & Economics*, 1(2), 1-12.

Nerudová, D. (2011). The international reporting standards and taxation system: connection or disconnection?. *Economics & Management*, 16.

THE FINANCIAL IMPACT OF CYBER RISK: EMPIRICAL EVIDENCE FROM GREECE AND THE EUROPEAN ECONOMIC ZONE

Maria Koutsari

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

As technology continues to advance and societies become increasingly interconnected, the risk of cyber threats and attacks has become a significant concern for individuals, organizations, and governments worldwide. Now more than ever, cyber threats continue to increase in frequency and sophistication with data breaches and privacy violations being the main event types used by cyber attackers. As a result, understanding the economic implications of cyber risk becomes more and more crucial in terms of effective risk management across all organizations regardless of country of business activity. Despite limited sources of data, this paper aims to investigate the impact magnitude of cyber risk in the context of two wide-spread notions related to cyber security; a) the average costs per incident and b) the systemic risk. Specifically, we examine a sample of 171 cyber incidents across 7 industries both from private and public sector that encompass all 4 main types of cyber events, namely phishing, data breach, malware and privacy violations. On an industrial level, our dataset allowed us to develop a predictive model that explains the impact magnitude of cyber risk not only on financial costs but also on the systemic industrial risk by employing classical bivariate analysis tools on the one hand and replications of recently developed logarithmic regression models on the other. Additionally, this paper attempts to answer a critical question namely how much of a corporate problem are cyber-attacks. Our findings suggest that despite low incident rates observed, the retail sector suffers the higher average costs among all business fields. Furthermore, we were also able to verify that there's a positive and statistically significant correlation between average costs and incident rates, however, the same is not true when testing the relationship behavior between systemic risk and incident rates. Last but not least our empirical results suggest that a 10% increase in the industrial incident rate is associated with a 0.005% increase in average costs.

Keywords: Cyber risk, cyber events, incident rate, financial costs, systemic risk, bivariate analysis, logarithmic regression, data breach, Europe, Greece

Introduction

In today's digital era, the rise of cyber risk has become a pressing concern for businesses and public sector organizations worldwide. Cyber risk refers to the potential harm or adverse consequences that arise from the use of digital technology solutions. It literally includes the threats and vulnerabilities related to information systems, networks, and data, and the likelihood of those risks being exploited by malicious cyber-attackers. With that being said, cyber risk can have significant effects on both private and public entities regardless of country or business activity.

For private organizations, cyber risk can lead to financial losses, reputational damage, and legal liabilities. An effective cyber-attack can result in the loss or theft of sensitive customer data (data breach), such as personal information (privacy violation) or payment details, leading to legal and regulatory consequences, as well as erosion of customer trust. Moreover, the disruption of critical systems and sensitive operations can cause significant financial losses due to outage, loss of productivity, the cost of recovery as well as all those efforts needed to reestablish operations and client trust.

In the case of public organizations, cyber risk poses additional concerns. Government agencies, for example, handle sensitive and classified information, making them attractive targets for malicious cyber-attacks. A breach in public sector organizations can lead to the compromise of national security, disruption of essential services, and potential threats to public safety. Furthermore, cyber-attacks on public infrastructure, such as power grids or transportation systems, can have far-reaching societal impacts, causing sudden economic distress.

Overall, the financial costs of cyber risk can be significant and far-reaching, affecting not only the bottom line of affected organizations, but also the overall economy and society. To mitigate these risks, it is important for businesses and public sector organizations to invest in robust cyber security measures to protect against cyber-attacks and data breaches. Collaboration between private and public sectors is also crucial to share threat intelligence and best practices. By understanding and addressing cyber risk, organizations can safeguard their operations, protect sensitive data, and maintain trust and confidence in an increasingly digital world.

This research attempts for the first time to investigate the impact magnitude of cyber incidents on both corporate finances and industrial systemic risk components. Since cyber incidents occur on a daily basis following a geometric sequence, the calculation of direct and indirect financial costs is by definition a very difficult task. Nevertheless, we can still estimate the average costs per cyber incident per industry by using external reliable financial reports and utilize them for the purposes of this study, thus constructing a multidimensional dataset and setting up a predictive regression model in an attempt to explain how cyber events interact with industrial changes over time.

This research paper is organized as follows: We first start with the literature review while next we emphasize on our research methodology. The core of this paper discusses the empirical findings, distinguishing between

average costs and systemic risk econometric results. The last part offers useful insights with the goal that our results can and will be utilized either by academics for future literature purposes or active policy makers associated not only with the private but also the public sector.

Literature Review

As one might logically deduce, the effects of cyber risk on the economy have mainly been a subject of extensive research during the last two decades. Despite the presence of cyber-attacks in the late 20th century, those incidents were limited to malicious attacks on public agencies and very large commercial websites and hence causing minimal financial or other damage. Nevertheless, numerous studies and reports have examined the economic consequences of cyber incidents, including data breaches, and their effects on organizations' financial stability and market performance. Understanding the relationship between incident rates, data breaches, and industrial systemic risk is crucial for assessing the overall impact on corporations and the broader economy. One important aspect of understanding the financial implications of cyber risk is quantifying the potential losses. Several studies have attempted to estimate the financial impact of cyberattacks. For example, a 2014 report by the Center for Strategic and International Studies (CSIS) estimated that cybercrime costs the global economy over \$450 billion annually. A conservative estimate would be \$375 billion in losses, while the maximum could be as much as \$575 billion. Even the smallest of these figures is more than the national income of most countries and governments as well as companies underestimate how much risk they face from cybercrime and how quickly this risk can grow (<https://csis-website>). However, a most recent study, conducted in cooperation with security software provider MacAfee, by Smith and Lostri (2020) increased this estimate to almost \$1 trillion after surveying 1,500 decisionmakers in government and businesses while attempting to also uncover the hidden added costs of cybercrime such as opportunity costs, downtime and damaged staff morale. Another study conducted by Ponemon Institute in 2022 estimated that the average cost of a data breach in the US only was \$9.44 million, while globally this value is differentiating by ca. \$5 million indicating that for 12 consecutive years the United States holds the title for the highest cost of a data breach in the world (<https://www.ibm.com/reports/data-breach>). Dreyer, Jones & Winkelman (2018) identify in their study two types of costs caused by cyber incidents; a) direct costs and b) systemic costs. Using multiple time-series datasets from around the world, authors found that cybercrime has a direct significant impact

on gross domestic product (GDP) with total (direct & systemic) costs of \$799 billion corresponding to 1.1% of the global GDP. Their conclusions are of great importance, especially from a macroeconomic perspective: Cyber risk costs are directly or indirectly associated with the economy's total output. Saini, Rao & Panda (2012) underline not only the effects of cybercrime on productivity but also on businesses' market value. According to their research study many companies maybe fearful of negative financial consequences resulting from public disclosure of a security breach. Previous research also suggests that public news of an event that is generally seen as negative will cause a drop in the firm's stock price.

Various other studies have examined the financial implications of cyber risk within specific sectors. For instance, a report by the European Union Agency for Cybersecurity (ENISA) analyzes the economic impact of cyber incidents on the financial sector in Europe on annual basis, highlighting the potential for direct financial losses, operational disruptions, and reputational damage across all European countries. ENISA generates annual reports on cyber incidents using online tools to facilitate the gathering of the cyber events per industry and per country. Moreover, Lagazio, Sherif & Cushman (2014) verified that the increasing cyber incident rates have affected negatively the economic growth of financial institutions through loss of confidence in the digital infrastructure or through loss of sensitive personal data.

Another study, this time conducted by Romanosky (2016) uncovers a really interesting outcome, namely that cyber event costs generate losses that represent 0.4% of firm's revenue, far less than other corporate losses due to fraud, theft, corruption or bad debt. Moreover, this research unveiled useful insights in terms cyber risk consequences on an industrial level; the financial sector as well as numerous vital for the society public organizations have been repeatedly affected by cyber attacks more than other industries of interest such as health, education or even retail sector.

Another area of research focuses on the role of insurance and risk management in mitigating the financial impact of cyber risk. Studies have examined the adoption of cyber insurance and its effectiveness in transferring risk. Additionally, cyber insurance can lead to risk reduction by promoting prevention measures and thus implementing in- depth analysis of data breach issues for a sound cyber insurance market with adequate consumer protection. In 2016 a study by the Organization for Economic Co-operation and Development (OECD) analyzed the state of cyber insurance markets in Europe and the US, highlighting the challenges and opportunities for insurers and policyholders. Yet, another area of research focuses on the relationship

between corporate cybersecurity and business efficiency. Just recently in 2023, Accenture published its latest annual findings discovering that the majority of organizations undergoing digital transformation increase their chances of being fully satisfied with the level of cybersecurity embedded in their digital transformation efforts by 10%.

Regarding Greece, the discussion surrounding the consequences of cybercrime is still in its early stages. Currently, the Ministry of Digital Governance, along with its National Security Incident Response Team (CSIRT), and certain private institutions involved in cybersecurity, are the sole entities responsible for collecting, documenting, and analyzing cybercrime-related incidents. Assimakopoulos & Toska (2011) conducted a survey aimed at depicting the cybercrime landscape in Greece. Due to the absence of official data at the time, they analyzed 1,000 incidents voluntarily provided by Greek users. Their findings raised growing concerns as they revealed a shift from financial fraud schemes to the emergence of cyberbullying and cyber-extortion incidents, primarily associated with newly established social networking platforms. Vlachos & Papanikolaou (2014) corroborated these findings by highlighting the significant influence of social media on cybercrime in Greece.

In contrast, Poufinas & Vordonis (2018) presented a method focused on insurance and financial security to calculate the expense associated with safeguarding a USD 1 income against cyber-attacks in Greece. By assuming a per-person loss of USD 1000, they discovered that a total amount of USD 4,381,215.44 would be required to provide comprehensive financial protection to the entire population of the nation against cybercrime. This amount would adequately compensate for the projected losses expected to be caused by cyber-attacks.

Research Methodology

By combining both quantitative and qualitative data from various sources, we have constructed a comprehensive dataset consisting of 171 observations encompassing cyber events that occurred in Greece and several European countries including Italy, France, Germany, Scandinavia, and the UK. The dataset spans from the years 2014 to 2021. Our focus was on selecting seven key industries that collectively represent a significant portion of the Greek economy. These industries include energy, communications, healthcare, retail, banking and finance, digital infrastructure, and government services. Each industry comprises for-profit organizations (referred to as

players) that vary in terms of size, structure, and revenue. With this in mind, our analysis centers on the total number of reported incidents in each industry, categorized by incident type and the type of compromised information. We also use the incident rate (IR) as an indicator of the impact magnitude cyber risk has to the industry itself following the simple equation formula:

$$\% \text{ IR} = \text{No. of incidents} / \text{No. of industry's players} \quad (1)$$

We next consider four main incident types; i) malware: harmful software that damages computer systems, ii) data breach: unauthorized access and disclosure of protected data, iii) privacy violations: improper collection, use, or disclosure of personal information and finally iv) phishing: deceptive cyber-attacks through various channels. Furthermore, the consequences of cyber-attacks can vary, leading to different outcomes such as software malfunctions, financial losses, breaches of customer data, and other miscellaneous impacts, such as the exposure of confidential business information related to investment plans and strategies. Each compromised piece of information can result in both direct and indirect costs for the affected organization.

To analyze systemic risk within different industries, we utilize a critical risk indicator known as the debt-to-revenue ratio. Specifically, we focus on four sectors: energy, communications, banking/finance, and digital infrastructure. In each of these sectors, we identify the organization considered "too big to fail" (TBTF) as the leader corporation. To determine their credit risk exposure relative to the industry's total revenue, we calculate their net short- and long-term liabilities. This calculation takes into account annual fixed effects and follows a simple formula:

$$\% \text{ SR}_{i,t} = \text{Debt}_{i,t} / \text{Revenue}_{j,t} \quad (2)$$

Here, % SR represents the systemic risk of the leader corporation i in year t in relation to the revenue generated by the industry j . Remark that this SR computation method applies for energy, communications, banking and digital infrastructure industries.

In order to estimate the SR of the retail, health and public services, we need to follow a different approach that incorporates the macroeconomic indicators of GDP and national external debt. The three industries mentioned have varying contributions (weighted) to the overall production of the country and thus national debt. In order to account for this, we assign specific weights

to each industry as follows: a) Government services: 0.23, b) Healthcare: 0.05, and c) Retail sector: 0.25. These weights are also applied to the external national debt in order to calculate the weighted credit risk for each industry of interest. Subsequently, the systemic risk of each industry is computed using the following formula:

$$\% SR_{j,t} = CR_{j,t} / Revenue_{j,t} \quad (3)$$

In this equation, % SR represents the systemic risk of industry j in year t, while CR represents the weighted credit risk of industry j in the same year.

Based on the data we have collected at an industrial level we have constructed a logarithmic regression model to gain a comprehensive understanding of the key factors that drive financial costs within a specific industry due to cyber incidents. A logarithmic regression is a statistical technique used to establish a relationship between a dependent variable (the variable being predicted or explained) and an independent variable (the variable used for making predictions or explanations). By applying a logarithmic transformation, our model can capture exponential relationships that may not be adequately captured by a linear regression model. It is important to note that our model is a replication of the log-to-log model developed by Jacobs J. in 2014 and the associated model developed by Romanosky S. in 2016.

Thus, we consider the following predictive model in the context of the average costs:

$$\log(cost_{j,t}) = \alpha + \beta_1 * \log(rev_{j,t}) + \beta_2 * \log(IR_{j,t}) + \beta_3 * \log(empl_{j,t}) + \beta_4 * (type_{j,t}) + \lambda t + \mu_{j,t} \quad (4)$$

where cost is the average cost per incident incurred by industry j in year t conducting as our dependent variable, rev depicts the natural logarithm of the industry's revenue, empl. the total number of employees of the respective industry, while our main explanatory variable IR describes the natural logarithm of incident rate as defined in equation (1).

Analogously, we estimate the impact of cyber incidents on systemic risk following a similar logarithmic regression model:

$$\log(\text{risk}_{j,t}) = \gamma + \delta_1 * \log(\text{rev}_{j,t}) + \delta_2 * \log(\text{IR}_{j,t}) + \delta_3 * \log(\text{empl}_{j,t}) + \delta_4 * (\text{type}_{j,t}) + K_t + \Theta_{j,t} \quad (5)$$

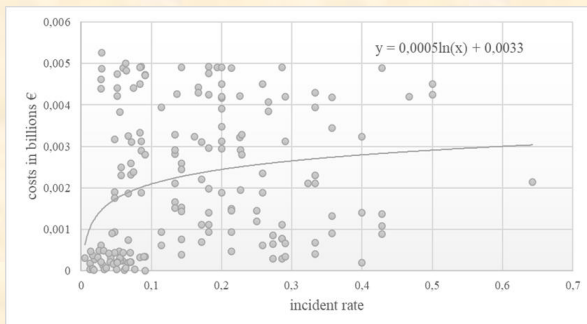
in this case, risk is the systemic risk of the associated industry j in year t . The rest of the variables, their respective coefficients and error terms are set in a similar manner as in equation (4).

Empirical Results

The regression results of equation (4) provide insights into the relationship between industrial revenue fluctuations and the average costs per cyber incident. Our findings suggest that there is a weak negative relationship between revenue and costs, suggesting that an increase in revenue could potentially decrease the financial impact of a cyber event. For corporations in a 1 billion € industry, the average costs per cyber event are estimated to be 0.0032 Bn. € or 3.2 Mio. €. Furthermore, a 10% increase in industrial revenues is associated with a 0.005% decrease in average costs per cyber-attack. While this correlation may seem weak from an industrial perspective, it can have significant implications for individual firms in terms of their size, preparedness, and the importance of the compromised information.

Moving forward with our analysis we observe a weak positive relationship between IR and costs. Figure 1 depicts exactly this; even if all industrial players experienced at least one incident simultaneously ($\text{IR}=1$), the average financial costs would be approximately 0.0033 Bn. € or 3.3 Mio. €. A 10% increase in the industrial incident rate is associated with a 0.005% increase in costs. While this impact may seem insignificant on an industrial scale, it can have a significant impact for individual firms.

Figure 1: The impact of cyber-IR on average financial costs on industrial level

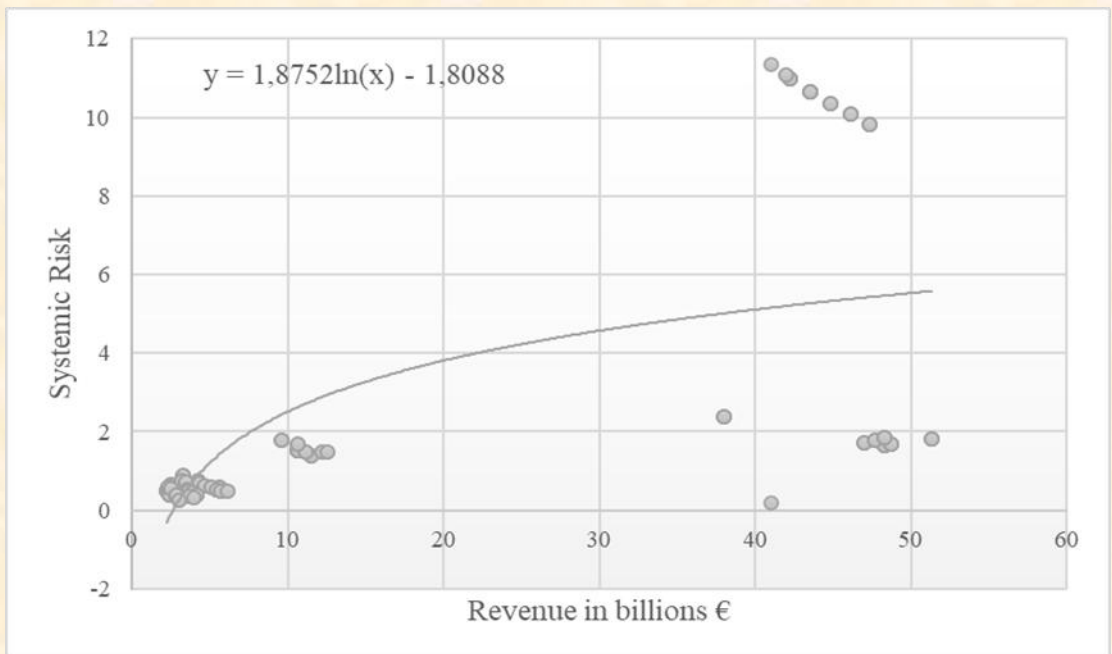


Source: *Author's empirical analysis*

The incorporation of the total no. of employees into the regression model provides us with some useful insights as well. Until now, no study attempted to regress the industrial personnel size with potential financial costs induced by cyber events. Back to our outcomes, we observe a weak negative relationship, indicating that an increase in the number of employees in the industry could potentially decrease the financial impact of a cyber event. For corporations in a 100K headcount industry, the average costs per cyber event are estimated to be 0.0036 Bn. € or 3.6 Mio. €. A 10% increase in the industry's headcount is associated with a 0.003% decrease in average costs.

Moving on to the systemic risk component, Figure 2 demonstrates a strong association between revenues and systemic risk. Larger industries exhibit higher credit hazards for the entire market. Industries with 1 billion € in revenue yield a systemic risk rate of 1.80, and a 10% increase in industrial revenues could potentially increase systemic risk by 18.75%. On the other hand, higher incident rates do not necessarily result in higher systemic risk; in fact, a 10% increase in incident rates is correlated with a 5.4% decrease in systemic risk rates.

Figure 2: The impact of cyber-IR on average financial costs on industrial level



Source: *Author's empirical analysis*

Table 1 summarizes the regression coefficient results for both equations. Note that all robust standard p-value errors are estimated to be way less than 0.01 only for equation (4) results, meaning that all regressor coefficients demonstrate an heteroskedastic statistical significance across the entire dataset related to cyber risk costs.

Therefore, SR and IR are negatively, however statistically insignificant correlated, indicating that higher incident rates do not necessarily result in higher systemic risk, rather the exact opposite is true. An incident rate of 1 would lead an industry to experience systemic risk levels close to 1.30, which is actually pretty high, however, not that high if we consider the credit exposure of the Greek economy in its entirety (high national debt – high systemic risk for 3 major industries).

Finally, results indicate that an increase in the total number of employees in a specific market could potentially increase the credit risk of the entire sector. A 10% increase in the number of employees would lead to a 13% increase in systemic risk rates.

Table 1: Aggregated coefficient results for equations (4) & (5)

cyber events	log (costs)	log (SR)
log (rev)	-0.0005	1.8752
St.Error	(0.00112)	(2.7096)
log (IR)	0.0005	-0.5410
St.Error	(0.00011)	(3.5116)
log (empl)	-0.0003	1.3076
St.Error	(0.00016)	(2.8098)
type	-0.0002	0.0915
St.Error	(0.00016)	(3.5466)
Observations	171	171
Year controls	yes	yes
R ²	0.1131	0.4163
Industry controls	yes	yes

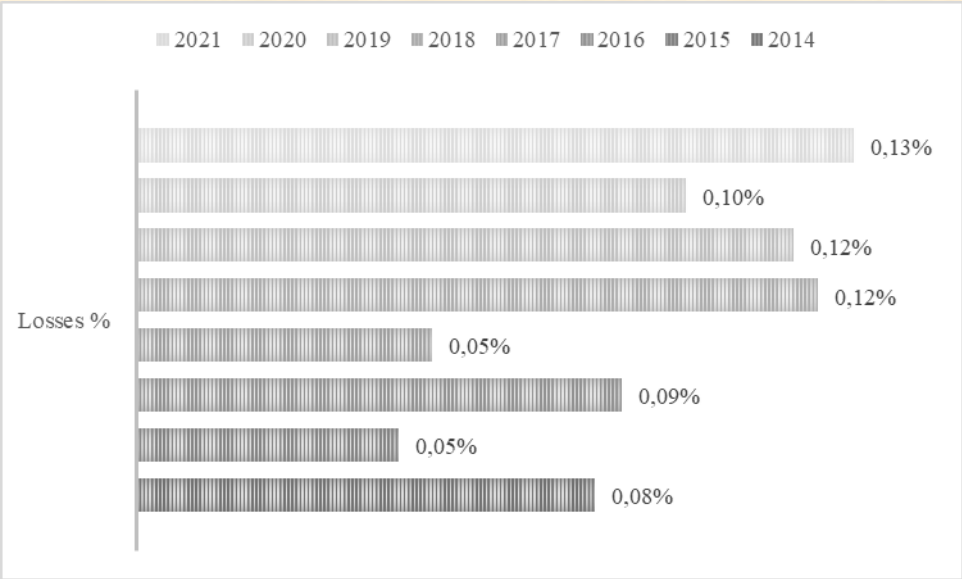
Source: *Author's empirical analysis*

Having conducted the empirical procedure and extracted the corresponding outcomes, it is now time to attempt to decode one of most

crucial topics in present corporate environments, namely how significant of a problem are cyber-attacks. To answer this question, the total costs of various industries are estimated based on their annual revenue. Our findings reveal that the retail sector suffers the most severe damage, with losses amounting to almost 30% of annual revenue. This translates to a monetary value of 14 billion € in total costs over recent years, with the loss rate intensifying during the pandemic due to commercial restrictions and increased reliance on e-commerce. The retail sector's heavy reliance on digital interactions has heightened cyber risk exposure, resulting in frequent data breaches.

The banking/finance sector ranks as the second most vulnerable, with a loss rate of 0.88%. Digital infrastructure and energy sectors follow closely with loss rates of 0.74% and 0.77% respectively. Although the financial and banking sector's loss rate remains relatively stable over the years, it is important to recognize that any cyber risk associated with banks can potentially impact the entire economy and lead to significant financial losses indirectly. While the absolute loss rates may appear low, the banking sector's crucial role in the modern economic system necessitates substantial cyber investments and defense strategies.

Figure 3: Public governance’s loss rates throughout the years



Source: *Author’s empirical analysis*

In contrast, Greek government services experience relatively less financial damage from malicious cyber incidents. With loss rates below 0.50% (Figure 3), the total costs of cyber risk have not had a major impact on the functionality of Greek governance thus far. However, it is essential to acknowledge that Greece's public sector has only recently expanded its operations into the digital realm, and therefore, cyber risk exposure was limited in previous years. As Greece's public sector continues to embrace digital adoption in governance and public services, policymakers will need to be prepared to tackle significant cyber challenges in the future.

Conclusions

The analysis presented in this research paper holds significant value for various stakeholders, including future researchers, corporations, policymakers, cyber security software providers, and consumers in Greece and Europe. Despite the limited availability of data on cyber risk incidents and associated financial costs, we managed to gather information not only from Greece but also from the wider European domestic economic area. Our empirical findings indicate a consistent rise in incident rates across all industries, with data breaches and privacy violations being the primary types of cyber-attacks employed by perpetrators. Despite the relatively low incident rates observed, the retail sector experiences the highest average and total costs compared to other industries. Additionally, customer data emerges as the most frequently compromised information during malicious cyber-attacks.

Furthermore, our dataset allowed us to develop a predictive model at the industrial level, shedding light on the impact of cyber risk on both financial costs and systemic industrial risk. Our regression results reveal a positive and statistically significant correlation between average costs and incident rates. Although this correlation may seem insignificant from an industrial perspective, it holds great significance for individual firms. Conversely, a 10% increase in industrial revenues is estimated to result in a 0.005% decrease in average costs per cyber-attack incident. Regarding industrial systemic risk, our regression outcomes align with the earlier bivariate findings, indicating that a 10% increase in incident rates is associated with a 5.4% decrease in systemic risk rates. Moreover, corporations operating in a 1 billion € industry would face average costs of 0.0032 Bn. € or 3.2 Mio. € per cyber event, while an increase in the total number of employees in a specific market has the potential to raise the credit risk for the entire sector. Lastly, we integrated loss rates per industry as a function of annual revenues. Our analysis highlighted the retail sector as the industry with the highest financial losses. Additionally, we provided a practical methodology outlining the necessary steps to

determine an appropriate annual cyber security budget. This framework can guide corporate policy makers in mitigating the financial costs associated with modern cyber risk. In summary, our research provides valuable insights into the impact of cyber risk on various aspects, offering practical implications for stakeholders in terms of financial costs, systemic risk, and budgetary considerations.

REFERENCES

- 1) Papanikolaou, A., Vlachos, V., Papathanasiou, A., Chaikalis, K., Dimou, M. & Karadimou, M., (2014). A survey of cyber crime in Greece. *Telfor Journal*, 6(2), 86-91. [[Google Scholar](#)]
- 2) Romanosky, S. (2016). Examining the costs and causes of cyber incidents. *Journal of Cybersecurity*, 2(2), 121-135. [[Researchgate](#)]
- 3) Dreyer, P., Jones, T., Klima, K., Oberholtzer, J., Strong, A., Welburn, W. J. & Winkelman, Z. (2018). Estimating the global cost of cyber risk. *Rand Corp. research reports*, 1-63. [[RandOrg](#)]
- 4) Saini, H., Rao, S. Y. & Panda, T. C. (2012). Cybercrimes and their impacts: A review. *International journal of engineering research*, 2(2), 202-209 [[Google Scholar](#)]
- 5) Lagazio, M., Sherif, N. & Cushman, M. (2014). A multi-level approach to understanding the impact of cybercrime on the financial sector. *Journal of computers and security*, 45(1), 58-74. [[ScienceDirect](#)]
- 6) Assimakopoulos, V., Minou, M., Vlachos, V. & Toska, A. (2011). The landscape of cybercrime in Greece. *Journal of information management & computer security*, 19(2), 113-123. [[Google Scholar](#)]
- 7) Poufinas, T. & Vordonis, N. (2018). Pricing the cost of cybercrime – A financial protection approach. *iBusiness*, 10(3), 128-143. [[Google Scholar](#)]

- 8) Accenture (2023). How cybersecurity boosts enterprise reinvention to drive business resilience. Retrieved from: [Link](#)
- 9) Organization for economic co-operation and development OECD (2016). A project on cyber risk insurance. Retrieved from: [Link](#)
- 10) European Union Agency for Cybersecurity – ENISA (2020). Annual report on data breach and other threats landscape. Retrieved from: [Link](#)
- 11) Center for strategic and international studies-CSIS & McAfee (2014). Net losses; estimating the global cost of cybercrime. Retrieved from: [Link](#)
- 12) IBM & Ponemon Institute (2021). The annual report on the costs of a data breach worldwide. Retrieved from: [Link](#)

FINANCIAL SYSTEM AND ITS ROLE FOR RECOVERY AND SUSTAINABILITY OF THE ECONOMY*

Donka Garcheva¹¹

Received: 07.06.2023, Accepted: 21.06.2023

Summary

During the financial crisis, the banks in Bulgaria imposed a relative restriction on the credit resource. High cost of borrowed capital. Before that and in the years when the crisis subsided. Banks stay away from securitization of assets and with too insignificant positions in risky securities. Thus, they do not help the development of the Bulgarian capital market, maintain the capital allocation with a low return and realize a symbolic income for the attracted assets.

Keywords: financial system, banks, crisis, pandemic JEL Codes: G2; G21

Banks are very important to any financial system. But when their capital originates from one destination, they bring additional risk to the national economy. During the financial crisis, the banks in Bulgaria imposed a relative restriction on the credit resource. High cost of borrowed capital. Before that and in the years when the crisis subsided. Banks stay away from securitization of assets and with too insignificant positions in risky securities. Thus, they do not help the development of the Bulgarian capital market, maintain the capital allocation with a low return and realize a symbolic income for the attracted assets. Industrial non-bank investors, on the other hand, are trying market behavior, but the lack of quality investment assets is keeping their positions in low-yield government debt high. By comparing and analyzing the investment portfolios of Bulgarian financial institutions, the research tries to prove that banks can help more for the development of both the Bulgarian economy and the national capital market. Market driven banking is a way to achieve higher returns for инвеститорите и банковите клиенти, но и важен канал за нарастване на the supply of quality assets and for the formation of investment demand.

Main theses: The financial system is undoubtedly an important part of the national economy and according to Rousseau & Silla (2003) it consists of five key components - sound public finances, prudent debt management and sound monetary arrangements, numerous banks, some focused on the local economy, others - to foreign markets, as well as those with a mixed profile, the central bank to stabilize

¹¹ Full-time doctoral student at the Department of Finance and Accountability at the Faculty of Economics, N. Rilski University of Applied Sciences, Blagoevgrad; e-mail: donkagarchevaa@gmail.com

the national finances and manage the external financial relations of the national economy, well-functioning securities markets.

As part of the economic system, the financial system should mediate the financial relations of economic entities and create optimal conditions for the national economy. This includes the attraction of capital through loans or public offering of shares and bonds, respectively the secondary trading of debt and property and an attractive investment process, a secure and efficient payment system, stable public finances. Last but not least is the role of alternative funding channels - risk investors and trade credit. Implementation of e-marketing and new technologies, such as machinery and equipment. Banks take advantage of European Covid-19 programs for staff relief and digital marketing solutions.

The main ones are that without financial systems, life is unthinkable. Key components is a financial system, the component of the Rousseau & Silla curves. The research shows several proven indicators, without which the existence of the economy and human intervention is impossible. The research shows that no matter how much new technologies and innovations are implemented, the human factor is indispensable. Proof of this are:

- Utilization of funds under European projects
- Innovations, for new channels in mobile devices, everything is one click away. Everything to operate alone and overview and transparency and coordination. This study examines a very limited aspect of the functions of the financial system, namely savings and channel access for private entities - business and citizens and the qualities of the investment process (primary and secondary trade with
 - financial instruments), through two types of financial instruments - banks and non-bank financial instruments in Bulgaria also for the period 2008-2018 and the same situation for 2019, 2020, 2021, 2022, 2023 - the pandemic. In this sense, the conclusions about the qualities of different financial intermediaries and their importance for economic prosperity will not be relevant to the payment system, public finance and central banking.
- Unforeseen situations and changes in the economic aspect, such as Covid-19, the war in Ukraine and military actions by Russia. The political direction of aid to Ukraine.
 - The changes that will affect the banking system on a global and national scale.
 - Savers, borrowers, investors and issuers make decisions in the conditions of the national financial system, but also taking into account the opportunities of foreign capital markets and banks. This means that their investments are tailored to the peculiarities of the capital or credit national market, namely levels of risk and information asymmetry, real requirements for transparency, market liquidity, opportunities for diversification due to the quality of available investment assets, possible returns, protection of property rights and the execution of contracts (which places the financial system in dangerous dependence on the legal system), transaction

costs (determined by the level of industrial efficiency - of the institutions of the capital market and banks, but also of the market infrastructure and supervisory institutions). The mentioned features are also taken into account by foreign investors and credit institutions. The existence of the above mentioned conditions is mandatory for the effective allocation of the limited economic resources. A major function of the financial system in terms of conditions for economic growth.

In a group plan, there should also be a result considered a success, but it should not match

for example, to the global goals of the organization, as well as vice versa - to realize the global goals, but to generate them in individual individuals or groups. The following evidence is available. Unlike savers, financial institutions can change the qualities of the credit system and the investment process because they make investment decisions and create the supply of assets and financing channels. They have huge funds comparable to the national gross product, and a large part of them are the holders of EU institutions with an impressive history and competences.

The object of the study is the financial intermediaries working in Bulgaria, and the subject - their investment decisions. The research methodology includes logical data analysis and conclusions based on the results.

The banking system in Bulgaria is facing its most serious challenge for the last ten years - the global pandemic of Covid-19. Due to the inextricable connection between the real and financial sectors, shocks are transformed into threats to credit institutions. The current development is dedicated to analyzing the negative consequences of the macroeconomic shock (pandemic) on the entire banking sector. It is implemented with the help of the matrix toolkit, representing the banking system as a network consisting of nodes (the institutions) and connections (the interbank institutions). Through the application of stress tests of bank bankruptcies, the reaction "network structure - bank stability" in the conditions of a crisis economic situation is evaluated.

The control return – a factor for managerial sustainability. The human psyche is structured in such a way that, both in a group and in a personal aspect, attention is directed to success. Talking about going back is strange to say the least. However, to motivate such unusual behavior one must define the philosophy of success. What could be generally accepted is that success is a subjective perception of a certain state of the personality, which includes the state of mind and the way of perception by others. In this sense, success is related to self-awareness, i.e., one's ability to think and reason about one's own behavior and to judge the attitude of others towards it. Whether it is an individual, a group or a social system, success is associated with overcoming something, with achieving a certain goal. What is predetermined, solved to a problem is the object of success, and the party that has overcome it enters the role of subject. Success as a desire for development and progress is limited. Limitations are directly related to the potential of the individual, respectively of groups and

organizations. Not understanding the policy, accumulating indebtedness in relationships or making mistakes in the execution of tasks is a serious obstacle to success. No less significant limitation is the unsuitable environment for the manifestation of the actual potential. The direct relationship between potential and success suggests that one of the main differences between fair and unfair competition is precisely due to certain inconsistencies between them. This, in turn, raises the question of the normative base and its relationship with morality and success. It is best when the moral and legal norms in each moral system correspond to each other. However, cases of divergence are not rare, i.e. some results of the behavior can be accepted as moral, but corresponding to the normative basis, and others may correspond to it, but be defined by society as immoral. It is not excluded and in personal or the feeling of dissatisfaction. The said confirms the subjective feeling and relative nature of success. The subjective feeling of success stems from the fact that sometimes the subject of success may affect the interests of the entire organization and be related to its strategic development, but individual members or groups may feel dissatisfaction for a certain moment or period. In such cases, personal or group interest diverges from strategic goals and may lead to demotivation of some staff. The opposite option is also not excluded, when the prospects are unclear, the strategic goals are not defined correctly, it goes, figuratively speaking, on "low lights", but for individuals or groups it is profitable and subjectively they give a positive assessment of the state of the organization. The reporting of such pseudo-success is a temporary delusion or an unhealthy interest of certain circles, but at the same time it is a signal of approaching conflicts or crises. Success should be distinguished from the specific result, although the latter is part of it. The value of success is expressed over time and is associated with a state and trends as a trade-off of changes, while the result is more specific and affects a certain period. In this sense, the philosophy of success requires that each specific result be compared with the perspective of development. If there is no development strategy, however, it is taken literally and the lack of possibility to relate over time makes it the main guide for development. For a controlled rollback to occur, the following questions must be clearly answered:

- Where we are, ie. what is the situation now?
- Can we influence the current situation and with what?
- What is our strategic behavior?

An answer to the first two questions can also determine the return as part of the strategic behavior. Without this, any rollback will be chaotic and out of control. It should be tied to a certain strategic dividend.

Collateralized loan obligations (CLOs) are emblematic of the new type of danger. They are typically created by syndicating loans, pooling them and then splitting them into securities with different ratings depending on their payment profiles. The value of outstanding CLOs reached about \$850 billion, making them the largest securitized credit sector in the US. And subprime leveraged loans form the

growing CLO share. which are partially converted into investment grade assets through the alchemy of securitization. The parallels with the nimble mortgage-backed securities of the turn of the century are obvious. Yet the similarities can also be overstated. The CLO market is about half the size of the riskiest mortgage-backed securities market. CLOs connect investors to a wide range of sectors beyond real estate. They are also more likely to be long-term investments, more resilient to the ups and downs of the market. Household and business balance sheets are mostly strong, and risks in the financial system appear manageable. In addition, an important stabilizer for the financial system will be the relative stability of the most important asset market in the US - real estate. The sharp jump in housing prices over the past two years

means a decline in sales and values is likely. But properties are in drastic short supply. Sam Hatter of Freddie Mac, a government-backed mortgage company, estimates that the U.S. has a shortfall of nearly 4 million homes due to delayed construction over the past 15 years. It is far better for the financial system to go into recession with a massive underinvestment fallout than with the consequences of overinvestment, as was the case in 2007. Recovery and Resilience Mechanism. The Regulation establishing the Recovery and Resilience Facility was adopted by the Council on 11 February 2021. The instrument at the heart of Next Generation EU provides €672.5 billion in support to Member States to help them deal with the economic and social consequences of the COVID-19 pandemic. On 13 July 2021, the first 12 EU countries: Austria, Belgium, Germany, Greece, Denmark, Spain, Italy, Latvia, Luxembourg, Portugal, Slovakia and France received the green light to use EU recovery and resilience funds to boost their economies and recover from the effects of COVID-19. On 28 July 2021, four more EU countries Cyprus, Lithuania, Slovenia and Croatia were also given the green light. On 8 September 2021, the Council adopted implementing decisions approving the recovery and resilience plans of the Czech Republic and Ireland. On 5 October 2021, the Council adopted implementing decisions approving the Malta Recovery and Resilience Plan. On 29 October 2021, three EU countries – Estonia, Finland and Romania – were given the green light as the Council, following a written procedure, adopted implementing decisions approving their recovery and resilience plans. On 3 May 2022, the Council welcomed the assessment of the National Recovery and Resilience Plans for two more countries – Bulgaria and Sweden. On 17 June 2022, the Council adopted an implementing decision approving the recovery and resilience plan for Poland.

Conclusions and conclusions

The introduction of new technologies and investments to improve the operation of the banking system. And using a recovery and resilience mechanism was adopted by the Council on 11 February 2021 the instrument.

The control rollback – a factor for management sustainability. The human psyche is structured in such a way that, both in the group and in the personal aspect, attention is directed towards success.

On 13 July 2021, the first 12 EU countries: Austria, Belgium, Germany, Greece, Denmark, Italy, Latvia, Luxembourg, Portugal, Slovakia and France were given the green light to use EU recovery and resilience funds to boost their economies and recover from the effects of COVID-19.

The scientific hypothesis confirms the changes in the economic basic world plan. They are subject to and change dynamically and timely to war, inflation and of course, last but not least, COVID-19 or other biological hazard.

**ПРЕГЛЕД НА ХИПОТЕЗАТА ЗА ДВОЙНИЯ ДЕФИЦИТ В
ГЛОБАЛЕН КОНТЕКСТ
REVIEW OF THE TWIN DEFICITS HYPOTHESIS IN A GLOBAL
CONTEXT ***

Мария Панова¹²

Received: 07.06.2023, Accepted: 21.06.2023

Abstract

In this study analyzes the relation between budget deficit and current account deficit in a global context. The essence of the Twin Deficit Hypothesis and the interpretations of the subject from the entire economic academy are examined, being compared with research on the subject by other authors.

***Keywords:** current account balance, government budget balance, twin deficit hypothesis*

***JEL Codes:** C 33, H 61, H 62, F32*

1. Въведение

Хипотезата за двойния дефицит (the twin deficits) е разработена от Джек Дж. Полак през 1957 г. (Ho, W., 2005). Този модел е известен още като монетарен (паричен) модел на МВФ. Моделът предполага отсъствие на връзка между спестяванията на частния сектор и измененията на фискалния дефицит.

Теоретично, разбирането на връзката между двата дефицита се основава на едно от основните макроикономически уравнения:

$$Y=C+I+G+(X-M)$$

Където:

C – е потреблението, състоящо се от разходи за крайното потребление на домакинствата в икономиката.

I – инвестициите, включват нови фирмени дълготрайни активи, но не включва размяна на вече съществуващи активи.

G – държавните разходи включат заплати на държавни служители, държавни разходи за крайни стоки и услуги на правителството, включително и инвестиционните разходи на правителството.

X – брутният износ на една държава

¹² Югозападен университет “Неофит Рилски”, Стопански факултет

М – брутния внос на една държава

Дефицита по текуща сметка се представя като разликата (X-M) между износа и вноса, а бюджетния дефицит като разликата (T-G) между бюджетните приходи и бюджетните разходи. От тук се вижда, че потреблението и инвестициите са тясно свързани със салдото по текуща сметка и бюджетния баланс.

Трябва да се подчертае факта, че при затворена икономика, фискалната и монетарна политика са с пълен ефект върху частното потребление и частните инвестиции. Т. е. съвкупните вътрешни спестявания са равни на съвкупните инвестиции. Докато при отворени икономики ефективността на политиките зависи и от степента на мобилност на капитала.

Кейнсианският модел предполага, че по-висок бюджетен дефицит, в резултат на по-ниски данъци и/или по-високи държавни разходи, увеличава разполагаемите доходи а от там потреблението, което от своя страна намалява частните спестявания и води до по-висок дефицит по текуща сметка.

$$CA = S^p - I - (G - T)$$

Когато правителственият дефицит расте (G – T се покачва), без частните спестявания (S^p) и инвестициите (I) да се променят особено, излишъка по текущата сметка (CA) спада с приблизително същия размер, с който се увеличава фискалния дефицит.

2. Теоретична основа

Кейнсианският възглед предполага, че хората имат висока пределна склонност да консумират от текущия си разполагаем доход и че икономиките разполагат с някои ресурси, които са недостатъчно заети. Освен това дефицитите не трябва да изтласкват частните инвестиции. Тези твърдения намират аргументация в трудовете на Eisner (1989), че увеличеното съвкупно търсене води до повишаване на рентабилността на частните инвестиции, като по този начин води до по-високо ниво на инвестициите спрямо определен лихвен процент.

В аспекта на Кейнсианската теза, Voileau и Normandin (2012) посочват два модела: демографски и прогнозен. При първия подразбираме, че потребителите прехвърлят част от допълнителната данъчна тежест върху следващите поколения, поради което увеличават съвременното потребление и намаляват спестяванията, което предполага по-голям дефицит по текуща сметка. Вторият модел представя, че ако днешният по-висок дефицит позволява на агентите да очакват по-висока бъдеща потенциална продукция (например поради по-висока производителност или предприемаческо поведение), тяхното текущо

потребление се повишава, което отново води до влошаване на салдото по текуща сметка.

Традиционната неокласическа теза предполага, че временните дефицити трябва да имат много малък ефект върху икономическите променливи в краткосрочен план. Auerbach и Koulikoff отбелязват, че ефектите върху богатството се натрупват с течение на времето, така че дори временните дефицити в крайна сметка изтласкват формирането на капитал. Те установяват, че временно намаляване на данъчните ставки с една трета за период от 5 години би увеличило спестяванията с около 20 % през първата година. В това състояние обаче, капиталът на глава от населението ще падне със 7.8%.

Хипотеза за еквивалентността на Рикарди твърди, че бюджетните и търговски дефицити не са взаимно свързани. Ако правителството възнамерява да генерира фискални излишъци, за да намали салдото по текуща сметка, то частния сектор може да реагира чрез намаляване на спестяванията по такъв начин, че ефектът на намаляването на бюджетния баланс да бъде компенсиран, което гласи теорията за рационалните очаквания. Противно на Кенсианската теория, Рикардианската предполага, че не съществува системна и стабилна връзка между бюджетното салдо и салдото по текуща сметка.

Причини за голям и постоянен дефицит по текущата сметка трябва да се търсят някъде другаде, като например: структурата на външната търговия, валутния курс, международната конкурентоспособност, степента на мобилност на капитала и други. Също така се смята, че в условия на отворени икономики, няма връзка между бюджетния дефицит и дефицита по текуща сметка, тъй като промяната в правителствената данъчна структура няма да окаже влияние върху реалния лихвен процент, инвестициите или потреблението. (Barro, 1989) (Neaime, 2008)

Barro (1989) твърди, че икономическите агенти очакват, че по-висок бюджетен дефицит ще доведе до по-високи данъци в бъдеще, ето защо реагират чрез увеличаване на текущите спестявания и затова липсва връзка между фискалния дефицит и дефицита по текуща сметка. Според Darrat (1988), бюджетното салдо и салдото по текуща сметка са повлияни и от други фактори и силна връзка между двете е доста трудно постижима.

Що се отнася до дефицита по текуща сметка, няма консенсус относно степента на неговото значение. Обобщавайки се две противоположни гледни точки. От едната страна Lawson твърди, ако дефицита по текуща сметка отразява частните решения за спестяване и инвестиции, няма причина правителството да се намесва и да го коригира. По скоро би било оптимално, ако има дефицити по текуща сметка в международен план, тъй като връзката между инвестициите и растежа е очевидна: за да имат високи темпове на растеж, особено

нововъзникващите или развиващите се икономики е разумно да предпочитат да имат повече инвестиции, отколкото могат да си позволят вътрешните спестявания.

От друга страна Blanchard (2007) изразява противоположната гледна точка, че когато дефицита по текуща сметка е твърде висок, правителството трябва да се намеси, за да го намали, дори дефицита да произтича главно от частните решения за спестяване. Ако една държава има много голям дефицит по текуща сметка, това би създадо известно рискове и внезапно спиране на притока на капитали. Освен това, ако дефицитът по текуща сметка произлиза от високи бюджетни дефицити, това би било проблемно и заслужава повече внимание.

Въздействието на бюджетния дефицит върху спестяванията, инвестициите и текущата сметка зависи отчасти и от начина на финансиране на бюджетния дефицит (чрез увеличаване на паричното предлагане, чрез вътрешни заеми, чрез използване на валутни резерви, чрез чуждестранни заеми, постъпления от приватизация и други). Увеличаването на паричното предлагане би провокирало инфлация. Това се дължи на реалния растеж на икономиката или на благоприятната промяна в търсенето на пари. Тъй като номиналните лихвени проценти са равни на реалните лихвени проценти и очаквания процент на инфлация, увеличението на инфлацията ще доведе до повишаване на номиналните лихвени проценти. Ако като инфлацията стане прекалено висока, гражданите могат да преминат към използване на чуждестранна валута при някои от своите транзакции. На пазара на спестявания търсенето на спестявания се е увеличило по две причини. Първо тъй като правителството се конкурира с частни фирми за едни и същи ресурс от национални спестявания, за да финансира дефицита си, то директно увеличава търсенето на спестявания и в резултат на това лихвените проценти се повишават. Второ в отговор на по-високото търсене на техните стоки, фирмите искат да увеличат своите инвестиционни разходи, за да увеличат предлагането на стоки. Инвестиционното търсене се увеличава в отговор на желанието за по-високо производство и в резултат на това лихвените проценти се повишават. Ето защо взимането на вътрешни заеми не е много удачен вариант за финансиране на бюджетния дефицит, тъй като биха изтласкали частния сектор и оказват натиск върху вътрешния пазар. Ако икономиката е добре интегрирана с международните капиталови пазари, държавните вътрешни заеми могат да изтласкат частния сектор към повече заеми в чужбина. Като в този случай състава на държавните заеми между вътрешни и външни източници няма голям макроикономически ефект.

В икономика с недостатъчно заети трудови и капиталови ресурси в резултат на рецесия или нисък растеж, финансирането на бюджетния дефицит трябва да бъдат напълно компенсирани чрез намаляване на покупателната способност на другите. Това е така защото увеличаването на съвкупните разходи, причинено от дефицита, води до връщане на безработни ресурси, генерирайки ново съвкупно производство, което съответства на увеличението на съвкупните разходи. В този случай е малко вероятно бюджетният дефицит да има голям ефект върху лихвените проценти и инфлацията, стига да бъде елиминиран, след като икономиката се върне към пълна заетост.¹³

Тясно свързани с Хипотезата за двойния дефицит са: мобилността на капитала, валутния курс и паричната и фискална политика.

В затворена икономика, местните спестявания трябва да финансират инвестициите, но в случай на отворена икономика някои от инвестициите може да се финансират от чуждестранни спестявания. Ето защо, спестяванията и инвестициите може да се движат независимо една от друга. Ако частните спестявания и инвестиции се движат пропорционално с бюджетното салдо, няма да има промяна върху текущата сметка продиктувана от промяна в бюджетното салдо.

При ниска степен на мобилност на капитала, националните спестявания (публични и частни), влияят положително и в голямо изражение на инвестициите. При тази ситуация бюджетния дефицит може да възпрепятства инвестициите и следователно икономическия растеж.

Ribe и Veeman (1986) установяват, че нетните инвестиции са равни на спестяванията на домакинствата, добавени към държавните и чуждестранните спестявания¹⁴. От тук заключаваме, че ако инвестицията е равна на спестяванията на домакинствата, тогава държавното и чуждестранното спестяване е равно на нула, тогава фискалният дефицит е равен на дефицита по текуща сметка.

Голяма част от изследванията, които отчитат и фактора за степента на международна мобилност на капитала, следват подхода за корелацията на спестяванията и инвестициите представен от Feldstein and Horioka (1980). Въпреки че представените констатации свързани с високата корелация на този модел, предполагат ограничена финансова интеграция. Този довод е поставен под съмнение от автори, които твърдят че теоретичните оптимизиращи модели при спестяванията и инвестициите се свързват дори при модели с отворени икономики. (Baxter and Crucini, 1993) (Razin, 1995).

¹³ Виж: <https://www.everycrsreport.com/reports/RL31775.html#fn9>

¹⁴ Държавните спестявания са данъците минус държавните разходи, а чуждестранните спестявания са търговския дефицит (с отрицателен знак).

В една перфектна капиталова мобилност, вътрешните инвестиции не се ограничават до размера на местните спестявания, а само до наличието на средства в международния капиталов пазар. Ако има капиталова мобилност, намаляването на националните спестявания води до увеличаване на дефицита по текуща сметка. Ако нямаме Хипотеза за еквивалентността на Рикарди, съвършената капиталова мобилност води до двоен дефицит и обратното, ако Feldstein-Horioka puzzle присъства – няма двоен дефицит.

Според модела на IS-LM, при перфектна капиталова мобилност и гъвкав обменен курс може да има два варианта за ефект върху текущата сметка. Първият е прекият ефект, като въздействието от публичните спестявания да влияят на салдото по текуща сметка. При този вариант частните спестявания и инвестиции не са засегнати, поради перфектната капиталова мобилност като реалният лихвен процент се връща в първоначалното си ниво. Вторият вариант в косвения ефект, при който когато експанзивната фискална политика увеличава вътрешния реален лихвен процент, тогава привлича чуждестранен капал. Като притокът на този капитал води до повишаване на реалният обменен курс и в последствие на това води до влошаване на салдото по текуща сметка.

При дадено ниво на спестяване, увеличаването на бюджетния дефицит или ще изтласка частните инвестиции, или ще привлече допълнителен приток на капитал. В това отношение са и изследванията на Corsetti and Müller (2006), които показват че хипотезата за двойния дефицит вероятно ще се запази за икономиките, които са по-отворени и с по-трайни фискални шокове. Те подчертават значението на търговския канал, които може да компенсира ефекта на изтласкване на фискалния дефицит върху частните инвестиции.

При държави с режим на фиксиран обменен курс, фискалният ефект би стимулирал доходите, но също така би имал обратен ефект върху цените и заплатите (т. е. влошаване на конкурентоспособността) и в крайна сметка би довел до влошаване на текущата сметка макар и в по-дългосрочен план. При фиксиран валутен курс обаче фискалният мултипликатор е по-голям. Това се дължи на факта, че фиксираният обменен курс предполага по-малко поскъпване на реалния обменен курс и по този начин негативният ефект върху търгуваната продукция. Хипотезата за структурната разлика представя, че увеличаването на спестяванията над инвестициите в една държава, води до увеличаване на инвестициите и дефицит по текуща сметка в друга държава(ви). (Ganchev, 2010) При малки отворени икономики дефицита по текуща сметка трябва да доведе в дългосрочен план до фискални излишъци. В краткосрочен план, разширяването на дефицита по текуща сметка може да се свързва с понижаване на бюджетния дефицит, тъй като притокът на капитали обикновено насърчава икономическия растеж и фискалния бюджет, докато намаляването

на капиталите корелира с икономически спад и влошаване на фискалната политика.

3. Анализ на изследванията от други автори по темата за Хипотезата за двойния дефицит

Понастоящем икономическата литература остава в противоречие относно валидността на хипотезата за двойните дефицити, като изследователите показват емпирични доказателства както в подкрепа така и против хипотезата. Техниките които се прилагат обикновено са тест за причинно-следствена връзка на Грейнджър и модели на векторна авторегресия (VAR модели). В допълнение се използват тъй наречените импулсни реакции (Impulse response) и декомпозиция на дисперсията (variance decomposition) и други. Като по-голямата част от изследванията представят развитите държави.

Kim и Roubini (2004) изследват ефектите от бюджетния баланс върху салдото по текуща сметка, което се улавя от въздействието на колебанията в производството. Те установяват, че диапазони от една до две години колебания в производството обясняват по-голямата част от различията между бюджетното салдо и салдото по текуща сметка. Изолирайки вариациите в бюджетното салдо, които са независими от колебанията в производството, те откриват че увеличаването на бюджетния баланс има положително въздействие върху текущата сметка в краткосрочен план, независимо дали бюджетния дефицит произтича от увеличение на държавните разходи или от намаление на данъчните ставки. Причината за това изненадващо откритие, е че след увеличение на бюджетния дефицит, частните спестявания се увеличават, както беше описано в предишни точки на дисертационния труд. В същото време лихвените проценти се повишават поради увеличените държавни заеми, а високите лихвени проценти намаляват частните вътрешни инвестиции. Също така установяват, че нарастването на частните спестявания и спадът на вътрешните инвестиции са достатъчни за да компенсират спада в държавните спестявания в краткосрочен план и да допринесат за подобряване на салдото по текущата сметка.

В изследване проведено за 193 държави през периода 1980 – 2016г. използвайки метода на най-малките квадрати с панелни данни с фиксиран ефект и отчитането на фискални правила (провежданата фискална политика от държавите) се потвърждава Хипотезата за двойния дефицит. Включването на фискалните правила сред регресорите намалява прекия ефект на бюджетното салдо върху салдото по текуща сметка.¹⁵ Като едно от обясненията на тези резултати са, че фискалните правила могат да засилват поведението на

¹⁵ Преди включването на регресора фискални правила, прогнозният коефициент е между 0,68 и 0,79. След включването на допълнителния регресор прогнозният коефициент пада на около 0,1.

Хипотеза за еквивалентността на Рикарди. Освен това авторите твърдят, че бюджетните разходи оказват положително въздействие върху баланса по текуща сметка, докато увеличаването на бюджетните приходи няма да окаже силно влияние. Откриват се доказателства за действието на Хипотезата за двойния дефицит най-вече в развиващите се пазарни икономики и страни с най-ниски доходи, както преди така и след Глобалната финансова криза. (Afonso, Huart., Jalles, Stanek, 2018)

Една от първите и най-масово изследвани държави по темата за двойните дефицити е САЩ, като при нея има и най-много противоречиви доказателства по темата. Едновременното нарастване на бюджетния дефицит и дефицита по текуща сметка на САЩ през 80-те години на 19-ти век предизвикват засилен интерес сред изследователите и политиките относно връзките и взаимоотношенията между тези променливи. В ранните изследвания за САЩ, широко разпространено е мнението, че търговският дефицит на САЩ се е увеличил главно поради стремително нарастващия дефицит на бюджетния дефицит.

Volcker (1984) е един от първите автори, които се опитват да обяснят връзката между дефицитите. Той предполага следния механизъм, чрез който бюджетният дефицит влияе върху дефицита по текущата сметка в САЩ. Първо, предвид високия бюджетен дефицит, реалните лихви се увеличават в резултат на доста ниския процент на спестявания. Лихвените проценти от своя страна привличат чуждестранни инвеститори, като по този начин водят до ръст на преките чуждестранни инвестиции. Въпреки че притокът на капитал подобрява бюджетния баланс, те водят до поскъпване на местната валута, което от своя страна влошава условията за търговия и в крайна сметка води до влошаване на салдото по текущата сметка.^v Други емпирични изследвания също са потвърдили наличието на двойни дефицити в икономиката на САЩ. В изследване за периода 1973 – 2008 г. се включват частните спестявания и инвестиции, които играят важна роля при утвърждаването на Хипотезата за двойния дефицит. Представя се важната роля на други фактори, които могат да повлияват и да обяснят връзката между бюджетните дефицити и дефицитите по текуща сметка. Доходите и лихвата имат значително положително въздействие върху салдото по текуща сметка на САЩ. До 1982 г. САЩ са имали излишъци по текуща сметка. Появата на големи дефицити по текущата сметка съвпада с големи фискални дефицити, които са в резултат от политики на Рейгън за намаление на данъците и увеличаване на разходите за военни цели. През този период текущата сметка се влошава с около 1% от БВП. Това е потвърждение на Хипотезата за двоен дефицит. Спадът на салдото по текуща сметка е много малък в сравнение с влошаването на бюджетния дефицит. През 2007 – 2009 г. бюджетния дефицит на САЩ се увеличава с 8 процентни пункта от БВП. Противно на Хипотезата за двойния дефицит, за същия период текущата сметка

се е подобрила с около 2,5% от БВП. Коинтеграционният коефициент в дългосрочната връзка между променливите не е постоянен в рамките на различните периоди. (Antonakakis, 2016). Въпреки това при използването на почти идентични данни Feldstein и др. автори достигат до обратното заключение.

Изследване в периода 1980 – 2015 г. за три държави от три континента с различна икономическа мощ: Канада – развита икономика; Бангладеш – нововъзникващ пазар и Гана – слабо развита държава. И за трите държави бюджетния баланс и текущата сметка са коинтегрирани. Потвърждава се хипотезата за двойния дефицит и в трите държави. Въпреки, че е прибързано да се правят обобщения за всички останали държави, авторите все пак дават предположения, че хипотезата действа в повечето държави с малки изключения. По-ранно изследване на същия автор за Нигерия – 1960 – 2011 г. потвърждава в краткосрочен план, че фискалните дефицити подхранват дисбаланс по текущата сметка, но в дългосрочен план резултатите подкрепят Хипотеза за еквивалентността на Рикарди.

В България, изследване в периода 2000 – 2010 г. потвърждава негативна корелация. Проф. Ганчев твърди, че с въвеждането на Валутен борд в България в средата на 1997 г. се създава автоматична връзка между платежния баланс и вътрешното парично предлагане. Ако хипотезата за двойния дефицит е вярна, то чрез фискална политика може да се контролира както платежния баланс така и паричното предлагане.

Излишъкът по текуща сметка може да бъде свързан и с някои екстремни икономически събития, като войните и рецесиите. Например свиването на кредитирането за намаляване на вноса, повишаването на експортните цени, рецесии и т. н. Кризите рязко могат да обърнат международните капиталови потоци и да предизвикат сериозни проблеми за икономиките с големи външни дисбаланси.

Всяко едно от емпиричните изследвания дава важна информация за връзките и зависимостите между тези променливи, но все още не е постигнато единодушно заключение за хипотезата за двойния дефицит. Причините могат да бъдат различни: различия в методологията и данните; иконометричните техники; възможности за структурни прекъсвания; позоваване на данни от кратки периоди, които не могат да дадат надеждни резултати и други. За преодоляване на тези различия, бъдещите изследвания могат да се концентрират върху сравняване на различни техники за оценка на общ набор от данни.

БИБЛИОГРАФИЯ

1. Afonso, A., Huart, F., Jalles, J., Stanek, P. (2018) "Twin Deficits Revisited: a role for fiscal institutions?," Working Papers REM 2018/31, ISEG - Lisbon School of Economics and Management, REM, Universidade de Lisboa.)
2. Antonakakis, N. & Cunado, J. & Gupta, R. & Segnon, M. (2016). "Revisiting the Twin Deficits Hypothesis: A Quantile Cointegration Analysis over the Period of 1791-2013," Working Papers 201607, University of Pretoria, Department of Economics
3. Auerbach, A. & Kotlikoff, L., (2002). "Auerbach-Kotlikoff Model," QM&RBC Codes 90, Quantitative Macroeconomics & Real Business Cycles
4. Barro, R. J., (1989). "The Ricardian Approach to Budget Deficits," *Journal of Economic Perspectives* 3, no. 2 (1989): 37–54
5. Baxter, M., Crucini, M. (1993) "Explaining Saving-Investment Correlations". *The American Economic Review*, Vol. 83, No. 3. (Jun., 1993), pp. 416-436
6. Blanchard, O., (2007) „Current Account Deficits in Rich Countries“, *IMF Staff Papers*, Palgrave Macmillan Journals, vol. 54(2), pages 191-219, June
7. Boileau, M., Normandin, M., (2012). "Do tax cuts generate twin deficits? A multi-country analysis," *Canadian Journal of Economics*, Canadian Economics Association, vol. 45(4), pages 1667-1699, November
8. Corsetti, G. and Müller, G. (2006) "Twin deficits: Squaring theory, evidence and common sense". *Economic Policy*, 48:598–638, 2006
9. Darrat, A. F. (1988). Have Large Budget Deficits Caused Rising Trade Deficit? *Southern Economic Journal*. 54: 879-87
10. Eisner, R. (1989). "Budget Deficits: Rhetoric and Reality." *Journal of Economic Perspectives*, 3 (2): 73-93
11. Feldstein M, Horioka C., (1980) "Domestic savings and international capital flows". *Econ J* 90:314–329
12. Ganchev G. T. (2010) The twin deficit hypothesis: the case of Bulgaria *Financial Theory and Practice* 34 (4) 357-377
13. Ganchev, G., Stavrova, E., Tsenkov, V. (2012), Testing the Twin Deficit Hypothesis: The Case of Central and Eastern Europe Countries. *International Journal of Contemporary Economics and Administrative Sciences*, 2(1), 1-21
14. Ho, W.S. (2005): Applications of Polak and Keynesian Models on Macao's Economy. Delivered by Vincent HO, Economist, Research and Statistics Department, Monetary Authority of Macao

15. Kim, S., Roubini, N., (2004). "Twin Deficit or Twin Divergence? Fiscal Policy, Current Account, and Real Exchange Rate in the US," Econometric Society 2004 North American Winter Meetings 271, Econometric Society.

16. Neaime, S. (2008) "Twin Deficits in Lebanon: A Time Series Analysis." American University of Beirut, Institute of Financial Economics, Working Paper Series No. 2, 2008

17. Razin, A. (1995), "The Dynamic-Optimizing Approach to Current Account", in P. KENEN (ed.), Understanding Interdependence: The Macroeconomics of the Open Economy, Princeton University Press, Princeton, NJ

18. Ribe, F., Beeman, W., (1986). "The Monetary-Fiscal Mix and Long-run Growth in an Open Economy," American Economic Review, American Economic Association, vol. 76(2), pages 209-212, May

19. Volcker, P. A. (1984) 'Facing Up to the Twin Deficits,' Challenge March/April, pp. 4-9

ПЛАЗМЕНО ТРЕТИРАНЕ НА ТВЪРДИТЕ БИТОВИ ОТПАДЪЦИ – ИНОВАТИВНО, ЧИСТО И РЕНТАБИЛНО

PLASMA TREATMENT OF MUNICIPAL SOLID WASTE - INNOVATIVE, CLEAN AND COST-EFFECTIVE*

Николай Патонов¹⁶

Received: 07.06.2023, Accepted: 21.06.2023

Резюме

Настоящата статия представя плазмената технология за третиране на твърди битови отпадъци, като иновативно, чисто и икономически ефективно решение. Технологията не е панацея за проблема с отпадъците, има своите предимства по отношение на конвенционалните подходи, както и своите недостатъци. Тя дава възможност за по-компактно обработване, което извлича значително по-голямо количество полезен ресурс от масата на отпадъците, не произвежда вторични продукти, които се нуждаят от обработка или депониране. Всичко това се случва чрез инсталация без комин при високи норми на икономическа ефективност.

Ключови думи: *твърди битови отпадъци; плазмена обработка на твърди битови отпадъци; инсиниратор; управление на отпадъците*

JEL Codes: *Q40; Q53*

Проблем с твърдите битови отпадъци

Има разбиране, според което материята е съгъстена форма на енергията. Енергията обаче се оказва последното желано битие на материята, която излиза от употреба на съвременния човек.

Голямото изобилие от продукти за задоволяване на растящите жизнени потребности на съвременния човек има обратна страна. Това са отпадъците, и по-скоро твърдите битови отпадъци, които се превръщат в корен на множество проблеми и пресечна точка на много интереси. От една страна се увеличават площите, заети от съоръжения за третиране и депа за съхранение на отпадъци. От друга страна, растат разходите на местните власти за управление на тези отпадъци. Не е за пренебрегване и потенциалната опасност за попадане на отпадъци или техни съставни вещества в околната среда, която остава актуална за дълго време. Проблем е също, че големи количества ценен ресурс остават блокирани и неоползотворени поради неразвитостта (или неефективността) на технологиите за рециклиране на твърдите битови отпадъци. Изгарянето на отпадъците, които са останали след дейностите по рециклиране,

¹⁶ гл. ас. д-р, Стопански факултет, Югозападен университет “Неофит Рилски”, Благоевград

решава проблема със съхранението, но създава замърсяване на атмосферата, което само по себе си е достатъчно голям проблем. Уместна е констатацията, че „термичното третиране на отпадъци е най-добрата дейност, която никой не иска в задния си двор“ (Carabin & Gagnon, 2006; Carabin & Holcroft, 2008). Във всички случаи, управлението на твърдите битови отпадъци е сравнително скъпа дейност, скъпа, натоварена с негативни обществени нагласи. Ето защо продължава търсенето на иновативни решения в тази област.

Потенциално иновативно решение на проблема с твърдите битови отпадъци

Иновативна, но не и нова, е концепцията за т.нар. газификация на отпадъците чрез използването на плазмена технология. Нещо повече, екологичната и икономическата ефективност на подобен род технология може да се повиши чрез комбинирането на процесите на газификация и витрификация в една система. Такова решение е дадено от канадската компания Пирогенезис (PyroGenesis, 2009, 2020; Rao, Carabin, Holcroft, 2010) в разработената от тях плазмена система за извличане на полезен ресурс от твърди битови отпадъци (Plasma Resource Recovery System). Тази система е разработена в края на 90-те години на миналия век и първоначално е използвана от американските военноморски сили. Покъсно е въведена и в търговска експлоатация, но все още не е получила масова популярност, като чисто и евтино решение за справяне с твърдите битови отпадъци от страна на общинските администрации.

Както беше отбелязано, новият елемент в системата е иновативния начин на комбиниране на процесите на газификация и витрификация в една единствена система. Най-общо, газификацията е процес на взаимодействие на органичната (част) фракция на отпадъците с вода и ограничено количество въздух в условията на екстремно високи температури за получаване на синтетичен газ, чието съдържание в най-голямата си част се състои от въглероден оксид и водород. Произведеният синтетичен газ се почиства и използва за производството на електрическа енергия чрез газови двигатели. Двигателите могат да произвеждат също топла вода и пара, които могат да се използват за нуждите на централизирано отопление или когенерация на електричество. Витрификация е процес на топене на цялата неорганична (част) фракция на отпадъците, за да се получи годна за рециклиране метална сплав и екологично безопасна стъкловидна шлака, която е подходяща за използване като инертен материал за строителството. В резултат на всичко това, системата не произвежда почти никакви вторични отпадъци.

Използването на задвижван от плазма реактор за газификация на предварително обработените органични вещества позволява завършване на процеса на газификация в рамките на части от секундата. Това позволява производствената инсталация да бъде много по-компактна от която и да е друга опция за термична обработка, което, от своя страна, прави обработката много по-евтино решение.

Като цяло, плазмената система третиране на твърди битови отпадъци включва четири основни процеса, а именно: 1. подготовка на отпадъците и захранване на пещта с отпадъци; 2. термична обработка чрез плазма; 3. почистване на синтетичния газ; 4. производство на енергия.

Същинското отделяне на органичната фракция на отпадъците от неорганичната фракция се извършва по време на първичната газификация в пещта. Неорганичната част (фракция) на отпадъците се състои от метали, стъкло, мръсотия и др. Тя се усвоява във фазата на разтопяване, като металите се превръщат в разтопена метална маса, чиято температура е около 1550° C. Разтопеният метал се извежда периодично на блокове за рециклиране. Стъкловидната шлака (разтопената неметална неорганична фракция) също се отстранява периодично и се трансформира във фин чакъл за използване в строителството. Гранулирането се постига чрез водно охлаждане на разтопената шлака.

Органичната част на отпадъците излиза от пещта като мръсен синтетичен газ с температура от близо 700° C, състоящ се предимно от въглероден оксид и водород, но също така съдържа определено количество въглеродни сажди, киселинни газове, влага и частично деструктурирани въглеводороди. Праховите частици се отстраняват от синтетичния газ с помощта на горещ циклон и се връщат в първичния газификатор.

След излизане от пещта, мръсният синтетичен газ се подава през вторичен газификатор, нагряван от плазмена горелка, където чрез комбинация от плазма и химическа енергия газът се нагрява отново до 1000° C. Вторичният газификатор смесва газовия поток с въздух и влага и излага високо реактивната смес на екстремните температури на плазмата. По този начин се гарантира, че всички сложни органични молекули и частици сажди се превръщат във въглероден оксид и водород. На изхода този газ се охлажда с вода до температура, която е по-ниска от 100 градуса. Всичко това се случва за по-малко от половин секунда. По този начин се постига „замразяване“ на състава на горещия газ и се избягва повторното образуване на сложни молекули.

За да стане годен за изгаряне в двигатели, синтетичният газ се почиства от нежелани химикали. Важно е да се отбележи, че

почистването на синтетичен газ е безопасна операция, която се практикува с търговска цел от много години. Тя се практикува за пречистване на синтетичен газ при газификация на въглища.

Така описаното плазмено третиране на твърдите битови отпадъци може да се практикува и при обработката на опасни отпадъци, в т.ч. и медицински отпадъци. В този случай се реализира значително по-висока добавена стойност за екологията. Когато се очертават ползите от тази технология, обикновено се прави сравнение с конвенционалното изгаряне на отпадъци, на чийто изход стоят големи количества вредни газове, сгурия, пепел и прахови частици. За разлика от това, технологията, която съчетава процесите на газификация и витрификация, минимизира количеството на твърдите вторични отпадъци, тъй като целият неорганичен материал се превръща в инертна шлака и метални слитъци, т.е. материали, годни за ново полезно използване. Така не се налага последващата обработка на пепел и депонирането на вторични отпадъчни материали. При конвенционалното изгаряне участват големи количества разяждаща сода, вар, урея и активен въглен за неутрализиране на киселинни газове. При плазменото третиране те не присъстват, което прави процесът не само по-чист, но и значително по-евтин. Нещо повече, при него не се отделят серни оксиди, защото цялата сяра се извлича като вторичен серен продукт с висока чистота. При този процес силно се ограничава и генерирането на азотни оксиди.

Изграждането на плазмена инсталация за третиране на твърди битови отпадъци има голямо предимство в сравнение със съоръженията за конвенционално изгаряне, защото прави възможно разделянето на процесите на обработка на отпадъците и получаването на енергията от тези отпадъци. Това дава голяма гъвкавост на местните власти, при изграждане на плазмени съоръжения, доколкото им дава възможност да не се ангажират с непосредствено производство и продажба на електрическа енергия. Мощностите за производство на синтетичния газ може да бъдат разположени в една община, докато генераторите могат да бъдат и в друга. По този начин коминът на целия процес ще бъде преместен на територията на друга община. Наред с това, обществената съпротива срещу комина ще е значително по-малка, защото той е многократно по-чист от конвенционалния.

Икономическа логика на иновативното решение

Най-голяма икономическа ефективност се постига, когато се използват газови генератори за производство на електрическа енергия от синтетичен газ. има няколко предимства. Генераторите могат да преобразуват химическата енергия на синтетичния газ в електричество с

ефективност от 35% до 40%. Оригиналната концепция за инсталацията предвижда част от електричеството да се използва за хранене на самата плазмена инсталация, а останалата част да бъде освободена за продажба. Приблизително 25% от химическата енергия на синтетичния газ излиза под формата на гореща вода с температура от 90° С, която идва от охладителната водна риза на генераторите. Потокът от гореща вода е устойчив, което го прави годен за използване в системи за централно отопление. Изгорелите газове, които излизат от комина на генераторите съдържат близо 30% от първоначалната химическа енергия на синтетичния газ, която също може да се оползотвори.

Не е за пренебрегване и това, че при по-големите системи, стойността на изходните продукти (метална сплав и инертен материал) покрива по-голямата част от оперативните разходи на системата, което прави технологията конкурентоспособна по отношение на депонирането и изгарянето. Стойността на енергията на изхода увеличава значително икономическата ефективност от експлоатирането на плазмената инсталация. Спестяването на такси и допълнителни разходи за депониране на отпадъци също допринасят за по-големия нетен ефект от една такава инсталация.

Каква е ситуацията в България

Плазмената технология се използва в изградени инсталации за третиране на твърдите битови отпадъци в много държави в света. Предимствата на гореописаната комбинирана технология са разпознати от американската армия и такива съоръжения са инсталирани на големи военни кораби. По-късно такива инсталации се появяват и на търговски круизни кораби. В канадски провинции има изградени инсталации на твърда земя, които прилагат комбинираната технология и функционират на търговски принцип.

В България технологията е одобрена от Министерство на околната среда и водите, но до реалното изграждане на инсталации не се е стигнало. Бяха правени опити за вземане на решение за изграждане на плазмени съоръжения в няколко големи общини, но те не събраха достатъчна подкрепа и плазмената технология за третиране на отпадъци остана в сферата на чистите намерения. Липсата на добро разбиране за технологията, убеждението, че проблемът с отпадъците не е толкова сериозен и може да чака, че към момента има по-важни текущи въпроси за решаване, прекалената иновативност на технологията, опасенията за дългосрочната икономическа ефективност, зависимостта на крайния енергиен продукт от морфологията на отпадъците са само малка част от бариерите, на които се натъкнаха предложенията за изграждане на плазмени съоръжения. Всичко това показва, че не само повече знания са

нужни на местния политически елит, но и по-голяма отвореност към иновативните технологии и гъвкавите финансови решения за минимизиране на евентуални рискове от влошаване на икономическата ефективност.

В публикацията са използвани материали от:

Gagnon, J., Carabin, P., 2006. A Torch to Light the Way: Plasma Gasification Technology in Waste Treatment. Waste Management World 1: 65–68.

Carabin, R., Holcroft, G., 2008. Plasma Resource Recovery Technology: Converting Waste to Energy and Valuable Products. Book of Proceedings of 13th Annual North American Waste-to-Energy Conference: 71-79 <https://doi.org/10.1115/NAWTEC13-3155>

PyroGenesis, 2009. Validation of the Plasma Resource Recovery System (PRRS) Simulations, Published Online, Available at: <https://www.pyrogenesis.com/wp-content/uploads/2019/09/11.-2009-05-IT3-Validation-of-the-PRRS-Simulations-Paper.pdf>

Rao, L., Carabin, R., Holcroft, G., 2010. Plasma Waste Gasification: Decentralized Approach to Production of Energy from Waste, Published Online, Available at: <https://www.pyrogenesis.com/wp-content/uploads/2019/09/2010-10-Crete-Plasma-Waste-Gasification-Paper.pdf>

PyroGenesis, 2020. Plasma Resource Recovery System. Background Information Order of Magnitude Cost Estimate for Treating 50 TPD of MSW. Proposal No. MBG/CII/004/20. Unpublished paper.

